

Journal

OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

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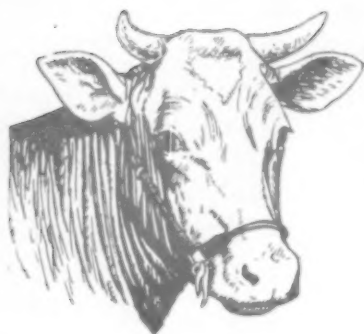
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This issue is in two parts. This is Part I.

(Part 2—Official Business Proceedings—is mailed to AVMA members only)



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Correspondence

October 16, 1957

Dear Dr. Aitken:

I noticed in the last AVMA JOURNAL the papers by Dr. W. G. Magrane. This represented material from his graduate thesis program which was supported by an AVMA Research Council fellowship. I am sorry that we did not receive a "plug" in the form of some acknowledgment. Possibly a note in a future issue concerning these publications and Dr. Magrane's Fellowship would take care of this oversight.

Sincerely yours,
L. C. Ferguson,
East Lansing, Mich.

[Thank you, Dr. Ferguson. Dr. Magrane's articles are a splendid illustration of the benefits accruing to the profession from their investment in the Research Fund of the AVMA. Sorry we failed to indicate this in the first part.—ED.]

AVMA Research Fellowships Available

The Research Council of the AVMA announces the availability of a number of fellowships for postgraduate training for the academic year, 1958-1959.

The recipient of a fellowship must be a veterinarian and a citizen of the United States or Canada. Veterinary students who expect to graduate at the end of the current school year and who wish to follow a career in research may apply for a fellowship.

The latest date for filing the completed application is Feb. 15, 1958. Approximately one month is required for processing completed applications after receipt by the secretary of the Council. Qualified persons should secure and submit applications as early as possible to insure their file being complete for presentation to the Committee on Fellowships.

The Committee on Fellowships of the Research Council will meet in March to consider applications, and the awards will be announced soon afterward. The stipend will be determined in each case by the needs of the individual, the location of the school in which he proposes to work, and other factors. In general the stipends range from \$100 monthly and upward.

Any qualified person interested in graduate training may obtain application blanks and other information by writing to Dr. C. H. Cunningham, secretary, AVMA Research Council, Department of Microbiology and Public Health, College of Veterinary Medicine, Michigan State University, East Lansing, Mich.

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Report of the Committee on Diseases of Dairy Cattle, R. C. Klusendorf, Chairman, J.A.V.M.A. 107:355 (Nov.) 1945.

1945

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Lick, R. P.; Newton, D. L., and Weber, W. U.: Paper presented at 52nd Annual Meeting, A.V.M.A., Oct. 10-12, 1956, San Antonio, Texas.

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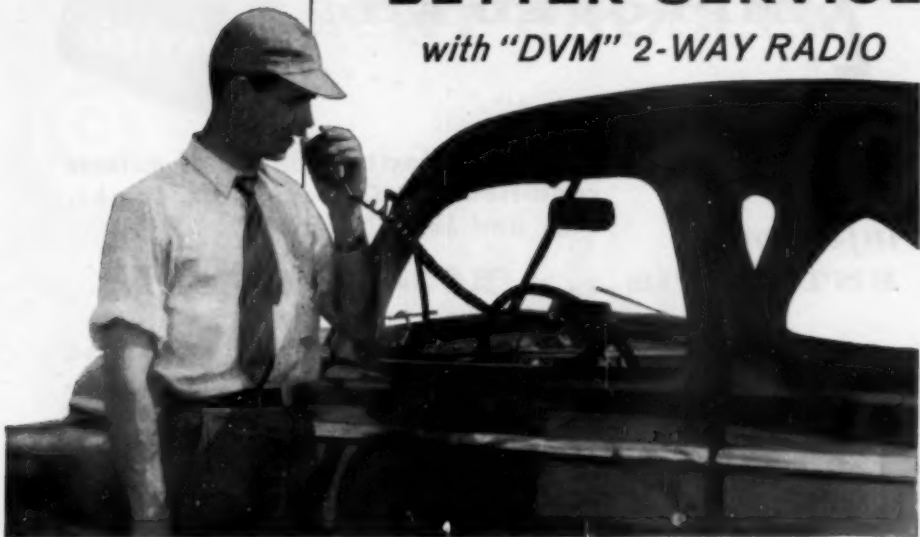
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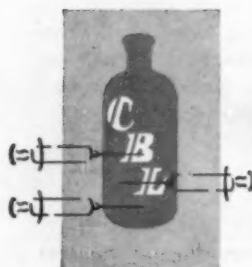
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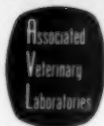
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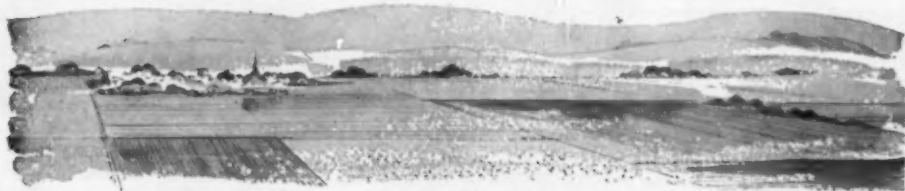


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News From Washington



Military.—Defense Secretary McElroy, on Nov. 18, 1957, acceded to the request of Senator Russell and Representative Vinson concerning the Oct. 1, 1957, order of his predecessor, Charles E. Wilson, that affected the functions of the Veterinary Corps (see JOURNAL Nov. 15, 1957, adv. p. 14). This will give the committees on Armed Services an opportunity to review the entire subject, for which the national Security Act provides. Chairman Vinson, in June, 1956, had called the attention of then Secretary Wilson to a National Security Act proviso which prevents the Defense Department from abolishing or transferring any function or substantial part of a function of any of the military services without first obtaining Congressional approval. If hearings are held on the entire matter by the House Committee on Armed Services, Chairman Vinson probably will schedule them for January, 1958.

Here is the complete text of the Defense Secretary's letter:

November 18, 1957

Dear Mr. Vinson:

This will acknowledge your letter of October 17, 1957, relative to Mr. Wilson's memorandum of October 1, 1957, to the Secretary of the Army on the transfer of inspection and grading services to the Department of Agriculture.

Because of the misunderstandings which have arisen over this action and with the desire to cooperate fully with you and your Committee, we have this day delayed the

effective date of the transfer for a period of four months until April 1, 1958.

It is our desire that any misunderstandings should be resolved and time afforded to you to make such inquiries as you consider proper. With the convening of Congress and as an aid to you in your inquiry, we will be prepared to submit to you supplemental detailed data on this matter.

Sincerely yours,
s/Neil H. McElroy.

Note: Honorable Richard B. Russell, U.S. Senate, received the same reply in acknowledgement of his letter of Oct. 9, 1957.

* * * *

U.S.D.A.—Proposed regulations governing the inspection of poultry products under the Poultry Inspection Act were published in the Federal Register Nov. 22, 1957 (see JOURNAL Nov. 15, 1957, adv. p. 14). The proposed regulations contain provisions applicable to the program during 1958 when applicants may voluntarily apply for and receive inspection under the Act. Additional provisions relating to other phases of the program will be published prior to Jan. 1, 1959, the date the Act becomes mandatory.

All persons who desire to submit written data, views, or arguments in connection with the regulations currently proposed should file same, in triplicate, with the Director, Poultry Division, AMS, U.S.D.A., Room 2096, South Bldg., Washington 25, D.C., not later than 30 days following publication in the Federal Register.

* * * *

Miscellaneous.—AEC has approved grants totaling \$160,443 for the purchase of equipment and teaching aids in nuclear technology (see JOURNAL Oct. 15, 1957, adv. p. 6). Six medical schools get \$90,645, four universities \$44,798, and \$25,000 to University of Michigan School of Public Health. Veterinary medicine, biology, and agriculture will be aided by the grants to Ohio State University, Alabama Polytechnic Institute, Brandeis University, and Central Michigan College.

A tax subcommittee (Senate Small Business Committee), which is continuing regional hearings on general tax problems for the small business man and self-employed, is considering including the Jenkins-Keogh plan for tax deferment for the self-employed as part of an omnibus tax relief bill for small business. Such an omnibus bill could be attached as an amendment to any House-passed tax bill that comes to the Senate. (Tax hearings by House Ways and Means Committee, see JOURNAL Oct. 15, 1957, adv. p. 6.)

A black and white photograph showing a collection of Amalgamated Vaccine products. In the foreground, there are several boxes: 'CHOLERA VACCINE', 'DIPHTHERIA VACCINE', 'TYPHOID VACCINE', and 'BRUCELLA ANTITOXIN VACCINE'. Behind them are more boxes, including 'ANTI-SARIC CRYPTOLAS SERUM' and 'BLACKLEG BACTERIN'. To the right, there are several cylindrical vials, some labeled 'TYPHOID VACCINE' and 'CHOLERA VACCINE'. The products are arranged in a way that shows different types of vaccines available from Amalgamated.

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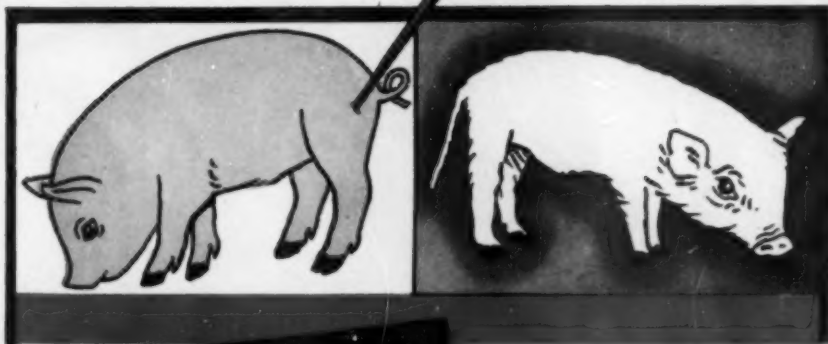
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REFERENCES: 1. Bull, W. S.: N. Amer. Vet., in press. 2. Henry, E. T., and Blackburn, E. G.: Vet. Med., in press.

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*Jones, S. V.; Belloff, G. B., and Roberts, H. D. B.: Vet. Med. 51:413 (Sept.) 1956.

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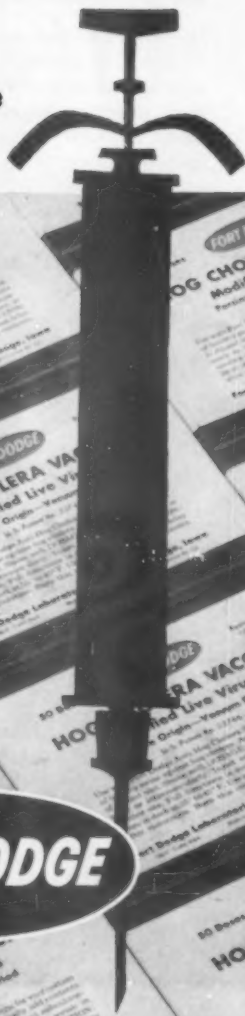
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A New Drug, Cyanacethydrazide, for the Oral and Subcutaneous Treatment of Lungworm Disease in Animals

J. K. WALLY, Ph.D., B.V.Sc., M.R.C.V.S.

Cheshire, England

LUNGWORM DISEASE (parasitic bronchitis, phthisis, pulmonalis verminalis) is widely distributed among all classes of livestock. A high incidence of the disease has been reported in many species, e.g. cattle, sheep, goats, pigs, Minnesota moose, and fur-bearing animals. Remembering the influence of climate on the epidemiology of the disease, it is clear that in North America different areas will be affected to varying degrees. However, at the present time, the great economic loss caused to the agricultural community by this disease is likely to equal that due to gastrointestinal worms.

The adverse effect of lungworm disease on growth in young cattle has been shown.⁹ We have also shown that it can retard growth of cattle, pigs, sheep (fig. 1), goats, and guinea pigs.

The lungworm diseases are generally more common in the young animal but, during the last ten or 12 years, have been seen in Great Britain to occur increasingly in older animals, e.g., in milking cows. The over-all loss, due to falling off in condition, loss of production, abortions, stunted growth, delayed deaths, and upset in herd replacement plans, is greater than the obvious loss due to acute disease.

The ill-effects on the host are due not only to the worms themselves but also (1) to the damage they cause which predisposes the host to bacterial and viral infections of the lung, (2) to the production

of allergic reactions,⁶ and (3) to the mechanical spread of viral infection.^{10,11}

That lungworms were the cause of disease in animals was first recognized about 1850, and since that time many treatments have been tried to remove the worms. A review¹² of various treatments recorded showed that before the use of cyanacethydrazide⁸ there was no substance which would kill or remove lungworms while they were in the air passages or lung tissue.

CYANACETHYDRAZIDE

Research for an effective drug against lungworm disease has been prolonged, undoubtedly, because the lungworms in the various large animals are host specific and there is no convenient lungworm in the small experimental animals. However, we were able to establish infections with the three major species of lungworms, i.e., *Dictyocaulus filaria*, *Dictyocaulus viviparus*, and *Metastrongylus apri*, in guinea pigs and thus screen a wide range of drugs against the worms we wished to control. Any product giving any indication of activity was further tested in cattle, sheep, goats, and pigs.

Over 3,000 compounds have been tested** and among them cyanacethydrazide was found to be the most active. It is the preferred drug in large animal therapy. This substance is a white crystalline solid which is soluble to the extent of about 30 per cent in water warmed to 20°C. The solu-

From the Imperial Chemical Industries Limited, Pharmaceuticals Division, Alderley Park, Macclesfield, Cheshire, England.

Presented before the General Session, Ninety-Fourth Annual Meeting, American Veterinary Medical Association, Cleveland, Ohio, Aug. 19-22, 1957.

*Patents applied for by Imperial Chemical Industries Limited. Dictycide, Helminex, and Elmix are the trade names. Cyanacethydrazide is to be sold exclusively in the United States by Fort Dodge Laboratories.

**Mr. C. H. Vasey and Dr. N. Greenhalgh assisted in the selecting of these compounds.



Fig. 1—Photograph showing three sets of twins, half of each set (on the right) were raised worm-free from birth by hand-raising indoors; others were raised naturally on the ewes on good pasture heavily contaminated with lungworms and intestinal worms.

tion, when exposed to light, commences to darken within a few days. A stable solution, however, has been prepared.

By the use of a new technique with tracheotomy tubes and polythene (alkathene) sac attachments (fig. 2), it was demonstrated that cyanacethydrazide expels alive all those worms present in the air passages. The worms lose their hold in the lungs and are forced up the trachea by the ciliary movement of the bronchial and tracheal mucous membranes. All worms are expelled if there is no mechanical obstruction to their passage up the respiratory tract. This means that no secondary reactions are set up by the presence of dead worms in the air passages. The worms

collected from lambs and goats during the course of treatment are shown (lower half of fig. 3).

Cyanacethydrazide has been found active against all the most important species of lungworms known in domestic animals.^{1,2} It is effective against *D. viviparus* in cattle, *D. filaria* in sheep and goats, *Protostrongylus rufescens* in sheep, and *M. apri* in pigs, i.e., it is effective against those worms normally living in the air passages but it has no action against *Muellerius capillaris* and *Neostrongylus linearis* when these are in the lung tissue. Preliminary results suggest some action against *Syn-gamus trachea*. It has no action against migrating larvae.



Fig. 2—Technique, using tracheotomy tube and polythene sac, to demonstrate the expulsion of lungworms from the lungs of any animal.

DOSAGE AND MODE OF ADMINISTRATION

The drug is active when given orally, subcutaneously, or intramuscularly. After trials in some 850 large animals, it is recommended (a) for subcutaneous and probably also for intramuscular injection, at 15 mg. per kilogram of body weight up to maximum doses of 5.0 Gm. for cattle, 1.0 Gm. for sheep, goats, and pigs, and 0.2 Gm. for furbearing animals; the maximum doses need not and should not be exceeded however heavy the animals; (b) for oral dosing, 17.5 mg. per kilogram of body weight up to the same maximum doses recommended for subcutaneous use. A single treatment removes the majority of the worms (65 to 100%) but animals severely infected should be treated on each of three successive days. Full details of herd and flock treatment have been given.¹²

TREATMENT OF INTERCURRENT INFECTIONS

It has been shown¹² that cyanacethydrizide may be satisfactorily used along with sulfadimidine (Sulphamezathine†), penicillin, piperazine, 1-diethylcarbamy-4-methyl piperazine, and phenothiazine. In all cases, each product was used at its own

†Sulphamezathine, the trade name for sulfadimidine, is produced by Imperial Chemical Industries Limited, Cheshire, England.

therapeutic dose level. The combination with phenothiazine is useful against lungworms in that the phenothiazine kills the first stage *D. viviparus* and *D. filaria* larvae while in contact with them in the gut or in the feces. Many larvae are released when the worms which have been expelled from the air passages break up in the gut.

Intercurrent infections should be treated at the same time as the lungworms. In our animals, the bronchopneumonia caused by the presence of lungworms has been complicated by secondary infections of the lung in about 15 per cent of the cases. Failure to treat intercurrent disease naturally prevents the optimum effect from the use of the drug.

TOXICITY OF THE THERAPEUTIC DOSE

The concentrated solutions used for subcutaneous or intramuscular injection may cause some slight and temporary local irritation. Within a few minutes of the parenteral injection of cyanacethydrizide, there may be lacrimation (15% of animals) and a slight watery discharge from the nostrils (30% of animals). A slight increase in the rate and depth of respiration also occurs. Following oral administration of the therapeutic doses, these immediate effects are not observed.



Fig. 3—Worms collected during treatment of lambs and goats to show effective treatment of lungworm disease.

Doses slightly in excess of the therapeutic dose given on three successive days cause only a slight reduction in milk yield, even in cattle producing over 5 gallons per day.

THE EFFECT OF OVERDOSAGE

Double the therapeutic dose, i.e., 30 mg. per kilogram subcutaneously or 35 mg. per kilogram orally, up to a maximum of 10.0 Gm. for cattle or 2.5 Gm. for pigs, sheep, and goats or 0.4 Gm. for dogs, did not cause any deaths in animals in fair to poor condition. After oral administration, some 30 per cent, and after subcutaneous injection, about 60 per cent, showed signs of intoxication varying from depression and inappetence to isolated mild convulsions five hours after subcutaneous injection, together with the immediate effects described as following administration

of the therapeutic doses. (A few animals become aggressive.)

At 40 to 50 mg. per kilogram subcutaneously in larger animals, fatal convulsions are caused. Orally, however, three times the therapeutic dose, except in severely debilitated animals, causes only depression and mild convulsions and the animals recover quickly.

Following deliberate overdosing, the toxic action is similar to strychnine and death results from asphyxia due to respiratory failure. Prolonged treatment with 25 mg. per kilogram to cattle, sheep, and goats does not cause any significant pathological change.

CLINICAL EFFECT OF TREATMENT

Early treatment to remove the lungworms has been shown to prevent the pathological changes caused by the pre-

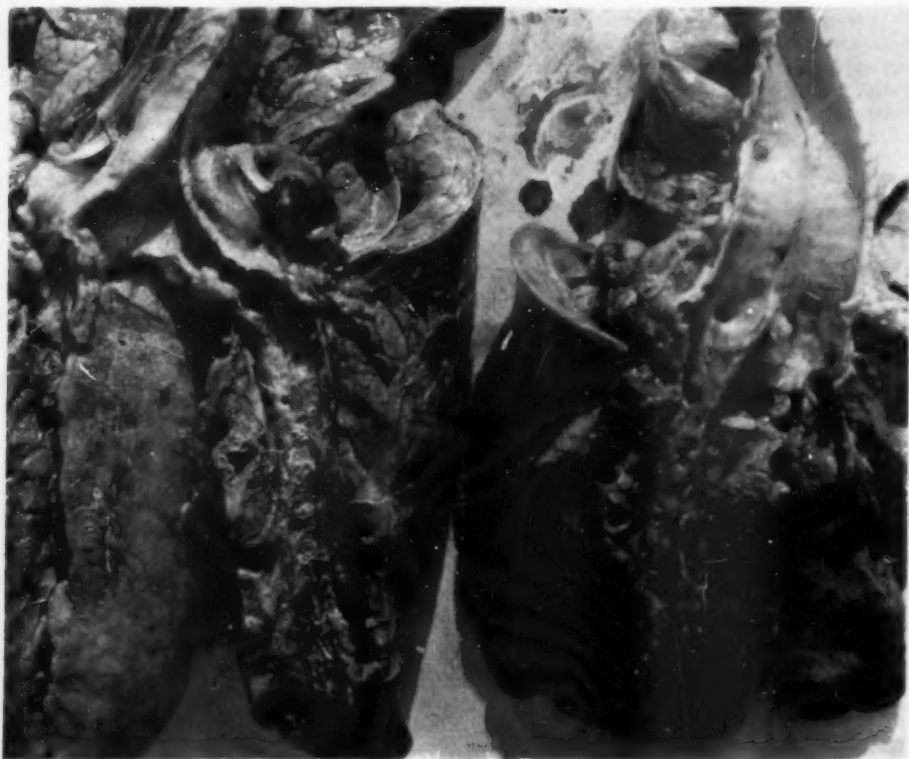


Fig. 4—Effective removal of *Dictyocaulus viviparus* from cattle. Lung from control (left, 1,564 worms); treated cow (right, 13 worms). The lung from the control animal is twice the weight of that from the treated animal. Treatment was 15 mg. per kilogram of body weight subcutaneously on each of three successive days.

TABLE 1—The Concentration of Cyanacethydrase in Milk Samples of 5 Cows Following Subcutaneous Injection of a Therapeutic Dose

Cow No.	Approx. live-weight	Milk samples for cyanacetyldiazide					
		6 hr. after injection		12 hr. after injection		22 hr. after injection	
		wt. of milk	p. p. m.	wt. of milk	p. p. m.	wt. of milk	p. p. m.
1	520 kg.	4,972 Gm.	2.5	n. s. *	—	n. s.	—
2	525 kg.	7,213 Gm.	2.5	n. s.	—	n. s.	—
149	690 kg.	10,433 Gm.	1.7	5,460 Gm.	0.7	11,720 Gm.	0
42	600 kg.	5,443 Gm.	2.3	4,082 Gm.	1.3	7,258 Gm.	0
541	625 kg.	11,794 Gm.	2.3	6,350 Gm.	2.0	11,780 Gm.	0

*n. s. = no sample.

sence of the worms, their eggs, and the larvae. The improvement in the clinical condition is most marked. The reduction and easing of the respiratory rate is particularly noticeable when there is little or no secondary infection. Necropsy showed that, in all species, the removal of the worms was quickly followed by disappearance of the pulmonary edema (fig. 4).

Early treatment can prevent deaths. Treatment later in the course of the disease removes the worms as a source of irritation to the lungs and thus speeds up the recovery of lung tissues. Of course if the disease (and intercurrent disease) have caused too much damage, the drug can not perform a miracle.

Prophylactically, it has been used to prevent the disease becoming established in the lungs of cattle, sheep, goats, and pigs, and we have shown that the treatment does allow immunity to lungworms to develop.

Early treatment of an initial heavy infection and repeated treatment (at approximately monthly intervals) of animals

with continuous access to infective larvae have both shown that in cattle, sheep, and pigs the rate of live-weight gain and efficiency of food conversion, and hence the profit per animal, was increased.

CONCENTRATION IN THE MILK AND TISSUES

The concentration of the drug in milk and tissues has been determined.† Following subcutaneous injection of the therapeutic dose (5 Gm.) to 5 milk cows weighing 520 to 680 kg. (1,146 to 1,509 lb.), there was a concentration of 1.7 p.p.m. to 2.5 p.p.m. of cyanacethydrazide in the milk six hours after injection (table 1).

Further examinations showed that the maximum concentration in the milk occurred four hours after subcutaneous injection. Double the therapeutic dose (10 Gm.), subcutaneously to cow 541 (wt. 625 kg.), gave a maximum concentration of 6.4 p.p.m. four hours after injection.

We have no evidence from animal experiments that repeated administration of

‡The estimations were made by Dr. W. A. M. Duncan.

TABLE 2—Maximum Concentration in the Tissues After Subcutaneous Injection of Cyanacethydrizide

Animal Dose (subcut.)	Cyanacethydrazide p.p.m.		
	Pig 141 30 mg./kg.	Calf 591 30 mg./kg.	Calf 595 30 mg./kg.
Tissue			
Heart	—	—	14.8
Liver	6.6	8.3	11.6
Lung	—	—	20.4
Kidney	4.2	14.6	10.6
Blood clot	—	16.9	44.0
Blood serum	—	8.5	7.9
Urine	—	12.0	14.0
	—	—	29.0
Brain	—	—	—
Biceps muscle	—	—	13.0
Gracilis muscle	—	—	12.3
Psoas muscle	—	9.3	13.9
Mesenteric fat	5.0	7.7	20.4
Kidney fat	—	14.1	23.6
Thymus	—	5.0	9.7
Spleen	—	—	8.0
Mesenteric lymph gland	—	—	15.1
Tissue from injection site	6.6	7.5	11.7
	—	—	11.8
	—	—	19.7
	—	—	15.4
	—	—	760.0
	—	—	—

even relatively large amounts (100 mg./kg. daily for 27 days to rats) gives rise to serious toxic effects. Several workers with human patients^{2,3,5,7,8} have given from 5 to 15 mg. per kilogram daily for up to 18 months. In considering the chance of acute toxicity to man, if we assume that, at the extreme, a 3-kg. baby received, in 24 hours, 500 ml. of undiluted milk containing 6.4 p.p.m. it would only receive 3.2 mg. of the drug in a day—this would be of no danger to the child.

Four hours after the administration of the therapeutic or twice the therapeutic dose (30 mg./kg.) to 3 calves and 1 pig, the drug concentrations in their tissues was determined (table 2).

The results show that the cyanacethydrizide is fairly evenly distributed throughout the extracellular fluid. Preliminary results indicate that the concentration in the body fluid is proportional to the amount of total body water (as determined by the methods of Soberman *et al.*, 1949, and Kraybill *et al.*, 1957).

PRECAUTIONS IN USAGE

The therapeutic dose need not and should not be exceeded. All animals should be handled as quietly as possible during and after a treatment. Animals with extreme emaciation and dehydration should be treated with care.

Animals showing nervous excitation due to concurrent disease (e.g., hypomagnesemia, acetonemia, meningitis) should be treated with care. Treatment may slightly exaggerate the existing nervous symptoms such as staggers and twitchings.

In the event of accidental slight overdose, the animal should rest quietly. Larger degrees of overdose can be combated by anticonvulsant drugs or anesthesia with sodium pentothal. Pyridoxine hydrochloride (vitamin B₆) is the most effective antidote to excessive dosing and may even be useful when the animals are in terminal convulsions.

SUMMARY

Cyanacethydrizide given orally or subcutaneously (15 mg./kg.) was shown to cause the expulsion of the important species of lungworms which live in the respiratory passages of animals, but not those in the lung tissues.

If given early, the pathological changes

caused by the parasites in the air passages can be prevented.

The drug is not toxic in therapeutic doses.

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Toxoplasmosis in a Swamp Wallaby

SAMUEL W. THOMPSON, D.V.M., and THEODORE H. REED, D.V.M.

Washington, D. C.

SPONTANEOUS TOXOPLASMOSIS has been reported as occurring in many species of birds, rodents, and larger animals. Several species of *Toxoplasma* have been described in the reporting of this disease. However, several authors^{1,2,17,19} are of the opinion that in animals there is probably only one species of *Toxoplasma* (*T. gondii*) with some strain variants.

Infection has occurred in the chicken,³ duck,¹¹ canary,^{2,10,11} grouse,¹⁰ pigeon,^{10,19,20,21} the red kangaroo,²⁰ wallaroo,²⁰ wallaby,²⁰ wombat,⁶ rabbit,^{2,20} guinea pig,^{20,22} mouse,^{17,21} rat,¹⁷ mole,³ African gonioid,¹⁷ squirrel,⁴ porcupine,²⁰ chinchilla,¹¹ mink,¹⁴ snow leopard,²⁰ puma,²⁰ fossa,²⁰ lion,⁸ sea lion,²⁰ cat,²⁰ dog,^{11,21} pig,^{17,21} cow,¹⁷ sheep,¹¹ squirrel monkey,²⁰ whiteface monkey,⁴ and man.^{1,10,21,22} There are also reports of experimental infection of various animals with the organism.^{10,19,20,21,22,23,24,25}

In addition to those cases reported as toxoplasmosis, there have been a number of reports in the literature of diseases caused by a *Toxoplasma*-like organism in the owl,²² canary,¹¹ penguin,²⁰ various species of sparrows,^{11,17} and other North American birds.¹⁰ These organisms, although morphologically similar in some respects to mammalian *Toxoplasma*, apparently are not infective for mammals.^{1,17}

Although toxoplasmosis has been reported as occurring in a wallaby,²⁰ no description was given of the gross or microscopic lesions observed in this infection. The following case report is, to our knowledge,²⁰ the first detailed histopathological description of toxoplasmosis in a wallaby.

CLINICAL HISTORY

On Sept. 29, 1954, the National Zoological Park received a number of animals from Australia,²⁶ including a pair of swamp or black-tailed wallabies (*Protemnodon bicolor*) which are related to the kangaroo and other members of the family Macropodidae. The species is distinguished from others by its heavy build, somber brownish coloration, and the stout, blackish tail; also by the contrast of the dark brown back with the rich, rusty yellowish underpart providing the bicoloration referred to in its specific name (fig. 1).

These 2 wallabies were exhibited with 4

others, of two different species. Their diet consisted of rolled oats, rabbit pellets, and occasionally alfalfa hay. Grain that was fed was inspected for beards and hay for sharp pieces of dry material, since various species of the family Macropodidae are known to be extremely susceptible to *Streptothrix* infection in the buccal cavity. Numerous instances of "lumpy jaw" have been reported in kangaroos.^{7,10}

They appeared to be developing normally, with no indication of illness. On Aug. 18, 1956, the female was found dead in her pen. A necropsy was performed by the Armed Forces Institute of Pathology.

GROSS NECROPSY FINDINGS

The carcass weighed 18 lb. No significant external lesions or evidence of external parasitism were found. The primary incision was made along the ventral midline. Subcutaneous fat was minimal and the superficial lymph nodes were dark red, but normal in size. The viscera were in normal position and the amount of fluid within the body cavities was not increased.

The lungs were bright pink and a light red, frothy fluid could be expressed from their cut surface. Several scars were present on the dorsal surface of the spleen. The liver weighed 445 Gm.; it was dark red, and its capsule was smooth except on the dorsal anterior surface where it adhered to the diaphragm. The pancreas was horse-shoe-shaped and grayish white with pink blotches distributed over its dorsal and ventral surfaces. Minute grayish spots were scattered beneath the serosa of the stomach. Discrete ulcers, approximately 0.5 to 1.0 cm. in diameter, were present in the pyloric mucosa and the mucosa of the small intestine. Significant lesions were not recognized in the other organs. Representative sections were taken from all tissues which were examined grossly and fixed in 10 per cent neutral formalin. The spinal cord and portions of the skeletal system were not examined.

MICROSCOPIC FINDINGS

Tissue sections were prepared from the following: brain (serial transverse blocks), lung, myo-

Dr. Thompson, a major in the Veterinary Corps, U.S. Army, is at the Armed Forces Institute of Pathology, Washington, D.C.; Dr. Reed is acting director, U.S. National Zoological Park, Smithsonian Institution, Washington, D.C.

*The animals were sent by Sir Edward Hallstrom, director of the Taronga Zoological Park Trust in Sydney, Australia.



Fig. 1—Photograph of a swamp wallaby.

cardium, aorta, spleen, mandibular and prescapular lymph nodes, mediastinal and mesenteric lymph nodes, tonsil, liver, gallbladder, diaphragm, thyroid, pancreas, adrenal gland, tongue, parotid gland, esophagus, stomach (three levels), small intestine (three levels), cecum, colon, kidney, urinary bladder, uterus, vagina, cloaca, pouch, mammary gland, skin, skeletal muscle, and omentum. All sections were stained with hematoxylin and eosin and replicate sections of the brain were also stained with Weil's myelin stain.²

Significant lesions were recognized in the following tissues:

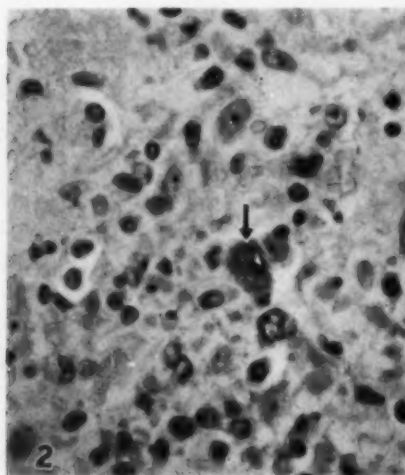
Lung.—The lungs were hyperemic with diffusely distributed focal hemorrhages. The alveolar septa, peribronchial and peribronchiolar stroma were edematous and, in some areas, the alveoli contained variable quantities of proteinaceous fluid.

Lymph Node.—The mediastinal and mesenteric lymph nodes were congested and

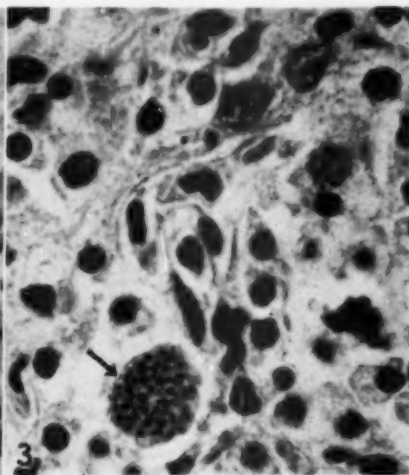
hyperemic. The interstitial spaces and lymph sinuses were filled with serofibrinous fluid and there were few recognizable lymph follicles. Numerous mononuclear macrophages were present throughout the nodes. Within the cytoplasm of many of these cells, round to pear-shaped organisms, 2.0 to 5.0 μ in diameter by 3.0 to 5.5 μ in length, had accumulated. These organisms had basophilic nuclei located near the blunter end of the pear-shaped forms, or eccentrically in the round ones, and slightly acidophilic cytoplasm. The nuclei of the macrophages were intact and the included clumps of organisms were not surrounded by a recognizable limiting membrane. On a morphological basis, these organisms were identified as *T. gondii* (fig. 2).

Myocardium.—The blood vascular structures were congested and extravascular accumulations of erythrocytes were present around many of the arterioles. Aggregates of *Toxoplasma* were present within individual myocardial fibers. These organisms were not surrounded by a recognizable limiting membrane.

Diaphragm.—Within the portion of the diaphragm which adhered to the liver, there were numerous foci of polymorphonuclear leukocytes and deposits of fibrin within the perimysium and endomysium. Accumulations of *Toxoplasma* were present



—AFIP 57-6054



—AFIP 57-5951

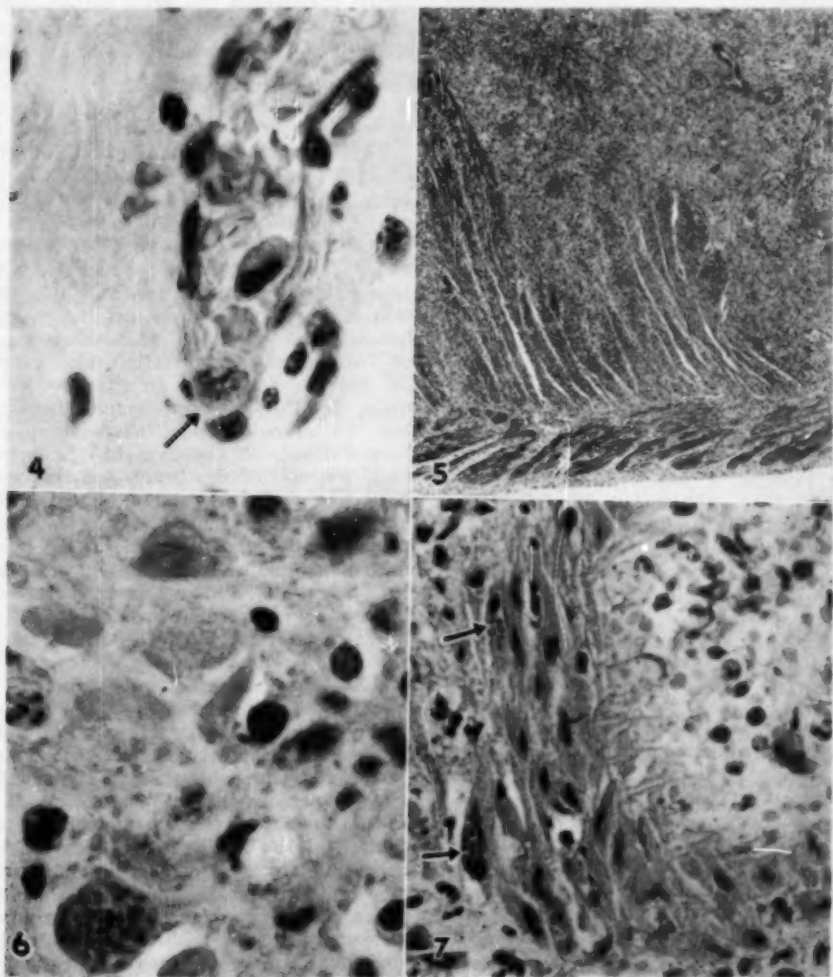
Fig. 2—Section of a mesenteric lymph node of a wallaby; *Toxoplasma gondii* are shown in the cytoplasm of a macrophage (arrow). H & E stain; $\times 500$.

Fig. 3—Section of a thyroid gland of a wallaby showing a pseudocyst (arrow) containing *Toxoplasma gondii* in a follicle. H & E stain; $\times 1,000$.

within some of the muscle fibers and within the cytoplasm of macrophages.

Thyroid.—The thyroid exhibited extensive alteration that represented artifacts associated with autolysis. The epithelial

cells were detached from the basement membrane of the follicles and appeared individually discrete. Colloid was not present in the majority of the follicles. The interstitial tissue was infiltrated by lympho-



(4)—AFIP 57-6031; (6)—AFIP 57-6029

(5)—AFIP 57-6431; (7)—AFIP 57-7590

Fig. 4.—This section of tongue from a wallaby shows *Toxoplasma gondii* in the cytoplasm of an endothelial cell (arrow) of a subepithelial venule. H & E stain; x 1,000.

Fig. 5.—Subserosal inflammatory foci in the tunica muscularis of a section of a wallaby's stomach. H & E stain; x 35.

Fig. 6.—This is a higher magnification of the stomach tissue shown in figure 5. *Toxoplasma gondii* can be seen in the cytoplasm of numerous macrophages and extracellularly in the inflammatory infiltrate in the tunica muscularis. H & E stain; x 1,000.

Fig. 7.—Stomach tissue of a wallaby showing *Toxoplasma gondii* in the cytoplasm of smooth muscle cells (arrows) of the tunica media of an artery. H & E stain; x 500.

cytes, polymorphonuclear leukocytes, and a few large mononuclear macrophages. Toxoplasma were present in the cytoplasm of many of the macrophages and occasionally within pseudocysts which exhibited a definite limiting membrane and appeared to be situated in the lumen of disorganized follicles (fig. 3).

Adrenal.—The adrenal cortex was congested. Clumps of Toxoplasma were present within the cytoplasm of many of the cells of the medulla, and within intramedullary pseudocysts.

Tongue.—Toxoplasma were observed within the cytoplasm of endothelial cells of subepithelial venules (fig. 4).

Stomach.—The epithelium and portions of the mucosa were autolyzed in many areas. Small, sharply demarcated focal areas of necrosis occurred throughout the mucosa. The adjacent mucosa, submucosa, and occasionally the tunica muscularis beneath these areas were hyperemic and extensively infiltrated by leukocytes (fig. 5). Toxoplasma were seen within the cytoplasm of many of the macrophages of the infiltrate. Extracellular organisms, which were crescentic with pointed ends, one blunter than the other, were present throughout the infiltrate. The nuclei of these extracellular Toxoplasma were located near the blunt end of the organisms (fig. 6). Occasionally, a ruptured macrophage appeared to be spilling out organisms into the surrounding infiltrate.

Sections of the grayish spots, observed beneath the serosa grossly, were found to represent focal areas of necrotizing myositis associated with a profuse infiltration, hemorrhage, and macrophage reaction in the stroma of the tunica muscularis. A few fibroblasts were distributed throughout the exudate. Toxoplasma occurred extracellularly within the inflammatory exudate and within the cytoplasm of macrophages and smooth muscle cells of the tunica muscularis and tunica media of numerous arteries in the inflammatory foci (fig. 5-7).

Small Intestine.—The epithelium and mucosa were autolyzed in many areas. Foci of frank necrosis involved the remnants of the mucosa, submucosa, and tunica muscularis throughout the small intestine. At the base and periphery of these necrotic foci, the adjacent tissue was hyperemic and extensively infiltrated by leukocytes. Toxoplasma were present extracellularly and within the cytoplasm of phagocytic and en-

dothelial cells in these areas of inflammation. The organisms were also present within pseudocysts, 18 to 20 μ in diameter, in muscle cells of the tunica muscularis.

Kidney.—Perivascular leukocytic infiltration of the interstitial tissue was observed throughout the renal cortex. Toxoplasma were observed within the cytoplasm of some macrophages and a few epithelial cells of the renal tubules.

DISCUSSION

The histopathological diagnosis of generalized toxoplasmosis depends on the observation of microorganisms morphologically compatible with *T. gondii*^{17,19} in stained fixed tissue sections from many organs. The characteristic lesions were extensive tissue necrosis and focal inflammation of the stomach, intestine, and regional lymph nodes associated with the presence of Toxoplasma. The infection was acute in its course and featured an extensive leukocytic, particularly macrophagic, response, but the granulomatous inflammation and focal necrosis of the liver and lungs and focal necrosis of the brain, frequently reported in toxoplasmosis in animals, were absent.^{14,17,18,21,22} The presence of Toxoplasma in the smooth muscle of the tunica muscularis and arteries of the gastrointestinal tract, observed in this case, have seldom been reported in veterinary literature.^{14,18,21} The lesions in the lungs are thought to represent hypostatic congestion and are not considered to be primarily related to the infection.

The source of the infection in the wallaby is purely a matter of speculation. Since Toxoplasma have been reported as occurring in pigeons in the Washington, D. C. area,¹⁹ the extensive scavenger pigeon population of the National Zoological Park is a possible reservoir and mode of transmission of the infection. Mice, rats, and other rodents have been reported as being spontaneously infected with the organism^{4,17,27} and must also be considered. Flies and arthropods^{16,28} might conceivably be potential vectors. At present, the mode of transmission of Toxoplasma is not understood.^{2,17,27}

SUMMARY

A fatal disease with an acute course in a swamp wallaby was characterized by gastroenteritis with focal necrosis of the mucosa and necrotizing myositis of the stom-

ach and small intestine and inflammation of the regional lymph nodes. The organisms observed in microscopic sections of the tissues in which the lesions occurred were identified morphologically as *Toxoplasma gondii*.

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Transmission of Toxoplasmosis

Toxoplasma gondii, the only species of the organism, is indiscriminate as to the type of cells it parasitizes and the species of animals it infects. However, there are various strains. It exists in two forms, the proliferative form which multiplies in cells until they rupture, then invade new cells; and the pseudocyst form which consists of a resistant capsule packed with immature parasites.

Serological surveys show more toxoplasmosis in man in eastern than in western states and more in warm, moist areas (Tahiti, 70%; Alaska, almost none). Transmission is not readily accomplished. Proliferative Toxoplasma have been found in the urine, feces, milk, and saliva of various animals during acute infection, but they do not survive long, and contact animals usually are not infected. Infection in man frequently has followed infection

in a household dog or cat, but it may have originated from a common source.

Toxoplasmosis has been reported in dogs from all parts of the world—some cases fatal, others subclinical. Dye test antibodies have been found in dogs of several American and European cities, in percentages of 18 to 59. In Germany, 23 of 38 persons whose dogs had *Toxoplasma* antibody also had titers of 1:25 or higher. This included five of six veterinarians, three of five veterinary assistants, and three of three kennel keepers.

The infection in young dogs begins with a parasitemia lasting up to two weeks but, except in acute, fatal cases, the organism has not been demonstrated in the dogs' feces or urine. Intestinal ulcers are frequently found in infected carnivores. Infection was more easily established in dogs with tapeworms.

Swine are quite readily infected. On one farm where raw garbage was fed and many rats were present, 16 of 21 pigs had dye test antibody titers of 1:64 or higher. Possibly, like trichinosis, transmission of toxoplasmosis could be from rats to swine to man. However, 48 per cent of older, orthodox Jews in New York were positive for *Toxoplasma* antibodies, and other nonpork-eating groups showed high infection rates. Of 46 vegetarians who had not eaten flesh for 20 years, 21.6 per cent had positive titers. The organism was less readily recovered by feeding milk or tissues of infected cattle to mice, possibly because the strains in cattle are not well adapted for growth in mice.

Recently, a technique for detecting *Toxoplasma* in meat samples has been developed. In one survey, parasites were isolated from the diaphragm muscles of 11 of 50 pigs.—*L. Jacobs in Pub. Health Rep. (Oct., 1957): 872.*

Toxoplasmosis in Children.—Of five children treated for toxoplasmosis, three had antenatal and two had postnatal infections. Of the antenatal group, a girl, 5 months old, had psychomotor retardation, hydrocephalus and refractory chorioretinitis; a boy, 10 months old, had psychomotor deficiency, epileptiform fits, and bilateral optic atrophy with chorioretinitis; and a boy 8 years old, had tremor, severe frontal headache, and evidence of epilepsy. The postnatal cases were in a boy 2 years old with acute encephalitis, and a girl 3.5 years

old with signs of a postencephalitic state and epileptic convulsions. All were treated with a sulfapyrimidine-pyrimethamine combination and were greatly improved.—*J.A.M.A. (Oct. 19, 1957): 891.*

Induced Toxoplasmosis in Dogs.—When young dogs were exposed to *Toxoplasma gondii* by various routes, all of 10 were infected intracranially, 3 of 5 intraperitoneally, 4 of 6 subcutaneously, 2 of 6 orally, but none of 3 adults were infected by the intravenous route. Four of the 30 dogs developed acute toxoplasmosis.—*Vet. Bull. (Oct., 1957): Item 2979.*

Report on Zoonoses

The following items are from the reports *Morbidity and Mortality* issued weekly by the U. S. Department of Health, Education, and Welfare.

Zoonoses in Man.—A report of zoonotic diseases in man covering a ten-year period, from the National Office of Vital Statistics (*Oct. 23, 1957*), shows the following (the first figure is for 1947, the second for 1956):

Anthrax—69 and 38
Brucellosis—6,321 and 1,300
Encephalitis—785 and 2,624
Leptospirosis—14 and 44
Psittacosis—27 and 568
Rabies—26 and 11
(Rabies in animals—8,920 and 5,681)
Rocky Mountain spotted fever—596 and 293
Salmonellosis—951 and 6,704
Trichinosis—451 and 262
Tularemia—1,401 and 522

• • •
Rabies.—A 14-year-old boy in South Carolina was bitten, in August, by a dog that had shown signs of excitement and had killed chickens. The dog was killed. On the twenty-second day after he was bitten, the boy had a spasm of the throat and died a few days later. Negri bodies were found in his brain.—*Oct. 25, 1957.*

• • •
Leptospirosis.—A 7-year-old boy, in Florida, became ill following an illness of his dog. Both were positive to a test for *Leptospira canicola*.—*Sept. 13, 1957.*

• • •
Encephalitis.—A girl, 21-months-old, in Florida, developed encephalitis during an epizootic of the disease in horses. She showed a positive titer against eastern equine encephalomyelitis virus.—*Sept. 13, 1957.*

In Texas, 119 cases of encephalitis in man, with three deaths, occurred in one county; 11 were confirmed as St. Louis encephalitis.—*Sept. 20, 1957.*

In California, 7 cases of encephalitis (6 St. Louis; 1 western equine) have been reported in the past year compared with 15 cases, 12 of which were western equine, in the previous year and 87, of which 68 were St. Louis type, the year before that. During the summer of 1957, 937 mosquito pools were tested from four areas of California; western equine encephalomyelitis virus was isolated from 42 pools and St. Louis encephalitis virus from 4.—*Oct. 11, 1957.*

Equine Encephalitis in Man.—In the United States, eastern equine encephalitis has occurred in epidemic form in man, in Massachusetts only, except for one epidemic in Louisiana and Texas in 1947. In Massachusetts, there were 34 cases in 1938, 4 in 1955, and 12 in 1956, a total of 50 cases. In all other states, only about 25 cases have been reported through 1956. Of the 50 cases in Massachusetts, 34 (68%) were fatal. The fatality rate was higher in patients over 10 years old (75%), but survivors in the younger group suffered much more serious sequelae.—*New England J. Med. (Oct. 10, 1957): 701.*

Typical Case of Histoplasmosis in Man.—An urban dweller purchased a small farm in central Missouri. Twelve days after cleaning a chicken coop, which had not been used for a year, he developed chills and sweating but physical examination, including a radiograph of the chest, was negative. When hospitalized the second day, his temperature was 103 F., and a radiograph showed mottled areas of infiltration throughout both lungs.

After six days, with high fever, some mental confusion, but only minor pulmonary symptoms, therapy was shifted to the new antifungal antibiotic, amphotericin B. It was given orally, 1 Gm. every six hours, for four days with no benefit. However, when given intravenously, the patient improved, and after 16 days on this therapy, was discharged. He had lost 20 lb. Five months later, he was asymptomatic and had regained the lost weight.

Histoplasma capsulatum was cultured

from his gastric washing and from the floor of the chicken house. The histoplasmin skin test was positive four days after the onset of illness and both precipitin and complement-fixation tests were positive on the ninth day.—*New England J. Med. (Sept. 26, 1957): 599.*

Leptospirosis in Germany.—Of 1,182 horse serums tested in Germany, 370 had agglutination titers for *Leptospira* of over 1:400 (216 for *L. grippotyphosa*); 364 of 1,045 dogs reacted (226 to *L. canicola*); 27 of 285 cattle reacted (13 to *L. canicola*); and 29 of 252 pigs, 14 of 347 sheep, and 16 of 259 fowl gave positive reactions—chiefly for *Leptospira icterohaemorrhagiae*. Two of 15 cats reacted to *L. canicola*.—*Vet. Bull. (Oct., 1957): Item 2942.*

Ringworm in Man and Animals.—Of 163 persons with ringworm, suspected of being of animal origin, in West Scotland, dermatophytes were cultured from 117 (*Trichophyton verrucosum* from 82; *Trichophyton mentagrophytes* from 15; and *Microsporum canis* from 12). Cattle were the reservoir of infection for 78 (48%) confirmed cases (*T. verrucosum*); pet animals for 7 cases (*M. canis*); and horses for 2 cases (*T. verrucosum* in 1, both *M. equinum* and *T. equinum* from the other).—*Brit. Med. J. (Sept. 21, 1957): 678.*

Tuberculosis in Man and His Pets.—When the persons contacted by 14 tuberculous dogs were examined radiographically, 9 significant cases of tuberculosis were found. When the dogs and cats owned by 37 patients with active tuberculosis were examined, *Mycobacterium tuberculosis* was recovered from swabs of the alimentary tracts of 2 dogs and 2 cats.—*Brit. Med. J. (Sept. 21, 1957): 675.*

Latent Anthrax in Cattle.—A zebu ox with a temperature of 104 F. was found, on slaughter, to have enlarged abdominal lymph nodes in which long chains of anthrax-like bacilli were seen. Cultures injected subcutaneously killed guinea pigs in 24 hours and sheep in 36 hours. Similar organisms were isolated from enlarged lymph nodes in other apparently healthy zebu cattle.—*Vet. Bull. (Oct., 1957): Item 2855.*

Precautions Taken to Prevent Introduction of Foreign Diseases

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BEFORE THE ADVENT of the airplane and the fast-moving ship, the introduction of disease by animals or animal products was a lesser problem than it is today. Prior to 1850, the movement of livestock was restricted to animals which accompanied the pioneer as he moved across the country, and spaces were so vast that the possibility of the spread of infection was slight. The following true story is an example of how disease has been introduced into the United States.

About one hundred years ago, a British vessel, named the "George Washington," docked in the port of New York, almost opposite the window of our present office at 45 Broadway. On this ship were some cattle which had been brought to furnish milk and food for the crew and passengers. The milk cow had gone dry so the master of the vessel proceeded to take her off the ship to a rural district, then known as "the Bowery," where he traded her for a fresh cow. The cow he traded, however, was infected with contagious pleuropneumonia which spread over the eastern seaboard and as far west as Ohio, and for a number of years this disease was the scourge of the infant livestock industry in the United States.

Luckily, even in those days, there were people farsighted enough to consider the eradication of contagious pleuropneumonia of grave importance, and a program was started which, in six or seven years, eradicated this disease from the United States. The introduction of a disease could not occur in this manner under our present laws and regulations.

In 1884, the Congress established what was long favorably known as the Bureau of Animal Industry and provided for quarantine stations to be established at the ports of entry to guard against just such an occurrence. Since that time, this responsibility has required considerable more activity. We are not only concerned with the introduction of live animals from countries where foot-and-mouth disease or rinder-

pest are known to exist, but also with the possibility of the introduction of such diseases through the importation of other products.

First in importance are garbage from ships and meat from passenger baggage. Two epizootics of foot-and-mouth disease have been directly traceable to garbage from a ship.

Since the law, section 306 (a) of the Tariff Act of 1930, has been in force, we have controlled the movement of garbage, meats, and animals from ships in the following manner:

All ships entering our territorial waters must declare whether they are carrying stores of meats, ruminants, or swine from countries where foot-and-mouth disease or rinderpest are prevalent. In case animals are aboard, drastic action is taken to see that these animals are slaughtered and disposed of in such manner as to eliminate any danger of exposure to our livestock.

All garbage from ships carrying foreign meats must be in a tight container and incinerated under the supervision of an inspector of the Animal Inspection and Quarantine Division.

Hides and skins from countries where these infections exist are allowed entry only if they are hard-dried, having the appearance of parchment, or are pickled in mineral acid, or if they are brought into the country for processing in establishments approved for the handling of restricted products, where the product is thoroughly disinfected by the use of a sodium bifluoride disinfectant for a 24-hour period.

Wool is allowed entry if it is free of blood stains and reasonably free from animal filth or dirt.

Bristles are allowed entry if cleaned, washed, and sorted.

The entry of fresh, chilled, or frozen beef, veal, lamb, and pork from these countries is prohibited. Such meats may be admitted if thoroughly cured or cooked, and if taken to plants where it is to be processed before being sold.

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Hay and straw material can not be brought in unless it is disinfected in such a manner as to destroy the rinderpest and foot-and-mouth disease viruses. This may be done with live steam and formaldehyde.

Animal glands, the only fresh products allowed entry from a country where foot-and-mouth disease or rinderpest exist, must be processed for pharmaceutical purposes only. They are sent only to approved establishments where the entire process of manufacture is adequate to guarantee a disease-free final product.

Animal stomachs and rennets are allowed entry if dried to the consistency of parchment, or they may be entered as restricted products in establishments where the product is handled in such manner as to prevent the introduction of foot-and-mouth disease and rinderpest.

Bone meal for feed or fertilizer must be a steamed or degelatinized product with a nitrogen content of 2 per cent or less. Hoof and horn meal may be imported if it has been heated to a degree adequate to guarantee freedom from foot-and-mouth disease, rinderpest, and anthrax. Tankage and meat scraps may be imported if accompanied by certificates showing they have been heated to a temperature to destroy foot-and-mouth disease and rinderpest virus and that they contain 35 per cent, or less, bone phosphate of lime.

All classes of animals, ruminants, swine, and poultry, except horse stock, can come to the United States (except from Mexico and Canada) only after a prior permit has been secured for such entry. When a permit is issued, certain requirements are set up, such as 60 days at the port of export, veterinary certification by government veterinarians of the country of origin, including certain diagnostic tests. After these requirements have been met, the animals are allowed entry into our ports. Before being unloaded from the plane or ship, they are given a complete veterinary inspection by our port veterinarian and, if everything is in order, allowed to move forward to quarantine and such tests as are required there.

Horses are inspected on the carrier on arrival and, if they come from certain countries, are held in quarantine for a blood test for trypanosomiasis and glanders.

Wild ruminants may be permitted entry

provided they are destined to an approved zoo where they can be held in strict control and not be moved about the country.

Since the recognition of African swine fever, wart hogs and bush pigs for zoological parks have not been permitted entry.

Biological products, vaccines, serums, and various hormone and glandular substances, from countries where rinderpest or foot-and-mouth disease exist, are held under control until a thorough investigation is made as to whether it is safe to permit their entry. The importation of semen from cattle, sheep, and swine from these countries is prohibited.

We are constantly requested to allow the entry of disease-carrying materials such as cultures, vectors, and blood samples for research purposes at educational institutions and laboratories. Each product is thoroughly investigated and its merits considered before it is permitted entry.

Since the end of World War II, there has been a great movement of people between the United States and Europe and it would seem that almost everyone in foreign countries believes that we, in America, are hungry for special meats and they bring great quantities of dried sausages, *salami*, and other meat delicacies in their baggage; Customs inspectors seize these for disposal. As much as 160,000 lb. of such meats have been taken from passenger baggage in one year and currently we are taking more than 6,000 lb. a month. Such meats are potentially dangerous because most of these sausages are made from ground beef, pork, and veal—seasoned, dried, and not cooked. The danger lies in the fact that many such products may not be eaten but will be thrown into the garbage can and may infect animals which are fed on raw garbage. At customs inspection of passenger baggage, restricted meats, plants, and seeds are seized and generally destroyed.

Because of reduced funds in recent years, baggage inspections had been seriously reduced. The ARS budget for the fiscal year 1958 includes a request for \$856,000 to be used to restore previously established standards of baggage inspection at maritime ports and airports. At the same time, additional funds were requested to strengthen the technical quarantine service at ports of entry.

With the introduction of the airplane for transporting livestock, we are faced with graver problems than ever in the past.

Most shipments from Europe, Asia, and Africa by boat would take 15 to 40 days and, in some instances, we would have knowledge of disease, if present, prior to the arrival of the ship and could properly control the animals on arrival. However, since July 1, 1956, at the port of New York, about 94 per cent of the poultry, 65 per cent of the horses and many cattle and zoological animal importations have been by airplane, the flight time of which is about 12 to 14 hours. Thus, exposed animals might not have had an opportunity to develop clinical signs of a disease prior to the landing. Unless we have adequate quarantine facilities, they can spread infection.

We are encountering considerable difficulty with the various research establishments that are importing serums for experiments. These must be held until we are satisfied that the serum is not of ruminant or swine origin or that it has been heated to a temperature which makes it safe for introduction into this country.

There have been months at the port of New York when over a million wet-salted cattle hides have been imported from countries where these diseases exist. Such hides must be removed to sealed cars, trucks, and lighters, and sent for disinfection, to tanning establishments that are operating under our supervision.

Quarantine and regulatory personnel are kept informed of the presence and the distribution of animal and plant diseases in the various foreign countries. This information determines to some extent the decisions that are made for issuance of permits for importations of animals and plants.

Health or inspection certificates are required for importation of animals, plants, seeds, and bulbs brought into the country. Upon arrival of such shipments from foreign countries by boat or airplane, inspection is made to determine the presence or absence of diseases or pests. This service is conducted in cooperation with the Customs Service, the technical work being done by representatives of the plant and animal quarantine branches of ARS. Many classes of nursery stock are released only after fumigation. Animals and poultry may be placed in quarantine for a period sufficient to be assured that they are free of communicable animal diseases.

Record-Producing Dairy Cows.—Pictures and records of the top milk and butterfat-producing cows of five dairy breeds, in America, are published in *Hoard's Dairyman* (Sept. 25, 1957: 912). On a basis of three milkings daily for 365 days, the all-breed record for milk was held by a Holstein with 42,805 lb. of milk and 1,246 lb. of fat (1951); the all-breed record for butterfat by an 11-year-old Brown Swiss with 31,166 lb. of milk and 1,544 lb. of fat (1957). One Guernsey produced 28,371 lb. of milk (1957), another produced 1,350 lb. of butterfat (1956). The Jersey records were 24,619 lb. of milk (1957) and 1,319 lb. of fat (1952). Ayrshires do not compete on this basis but, in 1937, one produced 31,156 lb. of milk and 1,356 lb. of fat.

On two milkings per day for 305 days, the records are: one Holstein 25,334 lb. of milk and 1,013 lb. of fat (1956); one Brown Swiss, 23,548 lb. of milk and 1,153 lb. of fat (1957); Ayrshires, 23,793 lb. of milk (1957) and 1,036 lb. of fat (1952); Guernseys, 20,100 lb. of milk (1956) and 921 lb. of fat (1952); and Jerseys, 18,282 lb. of milk (1956) and 1,031 lb. of fat (1947).

Livestock Estimates for 1958.—The Feed Survey Committee of the American Feed Manufacturers Association has made the following estimates of livestock population for 1958: horses and mules—8 per cent less than last year; beef cattle—little change; dairy cattle—20,450,000, a decrease of 1 per cent; swine—1957 fall pig crop of 38,362,000, 5 per cent more than 1956, and a 1958 spring crop of 58,000,000, 9 per cent more than last year; sheep—little change; and poultry—a net decrease of 3 per cent in laying hens, but a continuing increase in broilers, and little change in turkeys.—*Feed-O-Gram*, Oct. 28, 1957.

How Aspirin Acts.—Acetylsalicylic acid was found to be oxidized in the pituitary gland, which contains large amounts of vitamin C (an oxidizing agent), into gentisic acid, which has the same effect as the aspirin minus its toxicity. The pituitary gland lies near the body's heat control center in the hypothalamus.—*Sci. News Letter* (Oct. 26, 1957): 265.

Luminal Fluids of Bovine Female Genitalia

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DURING VARIOUS PHASES of the reproductive process, fluids in the cavities (or lumens) of female genital organs serve as vehicles or nutrient mediums, or both, for spermatozoa, ova, and embryos. The chemical and physical properties of fluids in female genitalia are undoubtedly of great importance to successful reproduction. The present study was undertaken in an effort to obtain data on the composition and significance of luminal fluids in bovine female genitalia.

MATERIALS AND METHODS

Reproductive organs were obtained from 93 cows, at slaughter, with the stage of the estrous cycle being known in about half of them. Cervicovaginal mucus was collected with a syringe after opening the vagina by longitudinal incision. Uterine fluid was collected by separating the uterine horns, attaching a small vial to the tubal end, and passing the horns individually through a hand-operated clothes wringer at moderate pressure. Contents of the oviducts were obtained in a similar manner, except that a vial could not be attached to the oviduct. Follicular fluid was collected by aspiration with a syringe and needle.

Chemical analyses were made by methods which

measuring oxygen uptake, glucose utilization, and lactic acid accumulation.

The effect of uterine fluid on the growth of *Escherichia coli* was studied by placing varying quantities of the fluid in broth cultures and determining growth rate by making viable counts initially and after a two-hour incubation period. Additional data on the occurrence of antibodies in female genital tract fluids were obtained by conducting agglutination tests on genital tract fluids obtained from 2 cows infected with brucellosis and 2 cows which were vaccinated as adults.

RESULTS

An abbreviated summary of the chemical composition of the genital tract fluids is presented (table 1).

Many cellular fragments, especially epithelial cell nuclei, were present in uterine and oviduct fluids. In general, the more cellular fragments present, the higher were the values for dry matter, nitrogen, and phosphates.

On the average, the pH of cervicovaginal mucus was about 7.8, uterine fluid 7.1, oviduct fluid 6.4, and follicular fluid 7.1. All of the fluids showed negative oxidation-reduction potentials, indicating a low affinity

TABLE 1—Data on the Composition of Bovine Female Genital Tract Fluids

Materials found	Fluid from			
	Vagina	Uterus	Oviduct	Follicle
Dry matter (%)	2.4	8.4	13.6	7.6
Ash (%) of d.m.	42.6	19.6	7.5	10.5
Protein (N x 6.25) (%)	1.1	4.6	12.2	6.6
Fat (%)	0.4	1.2	1.8	0.4
Reducing sugars (mg. %)	20.0	80.0	90.0	40.0
Sodium (mg. %)	170.0	220.0	208.0	304.0
Potassium (mg. %)	166.0	183.0	223.0	36.0
Calcium (mg. %)	11.0	15.0	12.0	12.0
Inorganic P (mg. %)	1.5	7.4	9.7	2.6
Chloride (as NaCl) (mg. %)	526.0	362.0	400.0	530.0

have previously been described.¹ Cyclic variations in the water and ash content of uterine tissue were determined from 23 cows slaughtered at known stages of the cycle. Motility and viability of spermatozoa in the female genital tract fluids were studied by placing small amounts of semen and fluid being tested in capillary tubes which could be sealed with vaseline and examined microscopically after various periods of incubation at 37 C. Metabolic activity of spermatozoa was estimated by

¹From the University of Illinois, Urbana. Dr. Olds, who was an AVMA Research Fellow in 1955-1956, is now at the University of Kentucky, Lexington.

for electrons or probably the presence of reducing compounds. Osmotic pressures were all slightly hypertonic except in the case of follicular fluid, which was slightly hypotonic.

Data on cyclic variations in the water and ash content of uterine tissue are given (table 2). It may be observed that water content of the uterus increased about 2.5 percentage units at about one day prior to estrus. At the same time, the ash content of uterine dry matter increased about 0.9

TABLE 2—The Water and Ash Content of Uterine Tissue at Various Stages of the Estrous Cycle

Stage of cycle	No. of cows	Water (%)	Ash (% of d.m.)
Estrus	4	83.66	5.65
1 day postestrus	4	81.85	5.30
3 days postestrus	2	81.42	4.76
4-17 days postestrus	11	81.63	4.97
18 days postestrus	1	80.21	4.86
20 days postestrus	1	83.85	5.90

percentage units. The correlation coefficient between water and ash content of the 23 samples was 0.59 and indicated that about 35 per cent of the variation in ash content was directly associated with changes in water content. Thus, it appears that estrus is accompanied by increased vascular permeability which results in an inflow of water. As would be expected, the water carries many of the inorganic salts with it.

On the average, under relatively anaerobic conditions at 37 C., spermatozoa remained motile about nine hours in mucus, seven hours in uterine fluid, 12 hours in oviduct fluid, and 19 hours in follicular fluid. In general, spermatozoa lived longer in mucus and uterine fluid from cows in or near estrus than in the same fluids at other stages of the cycle. Oxygen uptake by spermatozoa was highest in follicular fluid, followed by oviduct fluid, mucus, and uterine fluid, respectively. More complete data have been previously published.³

Brucella agglutinins were demonstrated in the genital tract fluids of 2 naturally infected cows and 2 adult vaccinated cows. The titer of agglutinins in follicular fluid was only slightly lower than that of blood serum. Uterine fluid titers were somewhat lower and more variable. Vaginal mucus titers were considerably lower, while oviduct fluid was negative. These results are summarized (table 3).

The addition of blood serum, uterine fluid, or mucus to broth cultures of *Esch.*

coli indicated the presence of antibodies against that organism. The generation time for control cultures was about 36 minutes, while the presence of uterine fluid in a concentration of 1:99 resulted in a generation time of 93 minutes during a two-hour incubation period. Larger proportions of uterine fluid resulted in further prolongation in generation time. However, if samples were incubated 24 hours, there was no apparent difference between treated and control samples. This suggested that the inhibitory action might be only "apparent," as could be the case if an agglutination reaction were taking place.

SUMMARY

Data are given on the chemical analyses of cervicovaginal mucus, uterine fluid, oviduct fluid, and follicular fluid of cows. Under relatively anaerobic conditions at 37 C., spermatozoa remained motile about nine hours in mucus, seven hours in uterine fluid, 12 hours in oviduct fluid, and 19 hours in follicular fluid. Oxygen uptake by spermatozoa was highest in follicular fluid, followed by oviduct fluid, mucus, and uterine fluid, respectively. About 35 per cent of the variation in ash content of uterine tissue was directly associated with changes in water content. There is approximately a 2.5 per cent increase in the water content of uterine tissue about one day prior to estrus. *Brucella* agglutinins were demonstrated in genital tract fluids of 2 naturally infected cows and 2 adult vaccinated cows. Antibodies against *Escherichia coli* appeared to be present in blood serum, uterine fluid, and cervicovaginal mucus.

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TABLE 3—Titer of *Brucella* Antibodies in Blood Serum and Genital Tract Fluids of 4 Cows

	Naturally infected		Adult vaccinates*	
	1	2	3†	4‡
Blood serum	1:400	1:1600	1:200	1:800
Mucus	1:40	1:80	negative	negative
Uterine fluid	1:400	1:250	negative	1:75
Oviduct fluid	negative	negative	negative	negative
Follicular fluid	1:400	1:800	1:100	1:200

*Slaughtered 34 days after vaccination. †In heat at time of slaughter. ‡In heat at time of vaccination and 13 days postestrus at time of slaughter.

Multiple Transfers Aid Skin Grafting.—Skin grafts which would live for nine days on the first transfer, lived 23 days during several transfers. Transplanting every four days reduced the antigen which produced resistance and intolerance to the grafts. Blood vessel formation proceeded more rapidly with each transfer.—*Sci. News Letter* (Oct. 26, 1957): 264.

Patellectomy and a Variation of Paatsama's Operation on the Anterior Cruciate Ligament of a Dog

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In February, 1957, a 26-lb. female cross-bred Terrier, 10 years old, was examined for increasing lameness of the left hind-leg. There was crepitation in the stifle area, the patella was displaced medially and, because of the pain on manipulation of the leg, anesthesia was necessary to complete the examination. When completely relaxed, examination revealed a rupture of the anterior cruciate ligament, as indicated by the so-called "anterior drawer sign." A test dose of 1 cc. of 2 per cent procaine solution followed by 10 mg. of prednisolone was injected into the patellofemoral synovial cavity. The dog was released with the recommendation that patellectomy and anterior cruciate ligament transplant repair be considered if no improvement occurred. When returned on April 27 for surgery, the dog would bear little weight on the leg.

After surgical preparation, the skin was incised in the lateral parapatellar area from the tibial crest proximally for about 6 inches. A thin strip of skin (3/16 in. by 6 in.), to be used as a skin transplant to repair the ruptured anterior cruciate ligament, was removed by making another incision parallel to the first incision. The strip of skin was placed in 1:1,000 quaternary ammonia solution. (Armistead² found that by imbedding skin there was a cessation of hair growth and that, in time, the skin was converted to tendinous tissue. One must remember that skin can not be sterilized and that here organisms will be drawn into bone where circulation is poor.)

Patellectomy then was performed by circumscribing the patella with an incision as it was immobilized with forceps, leaving an open joint. This synovial gap was closed vertically with steel wire sutures. (Anatomically, removing the patella severs the connection between the quadriceps femoris and the tibia; however, in the dog, the tough tissue and capsule immediately surrounding the patella was strong enough so that no functional defect occurred. By suturing this area vertically, shortening

and tension on the quadriceps femoris was avoided.)

To expose the area for transplant repair using Paatsama's method,¹ the joint capsule was incised laterally. The anterior cruciate ligament was found to be completely torn apart. Holes for the skin transplant were drilled in the femur and tibia (fig. 1) with a 1/8-inch surgical drill. (The 3/16-in. strip of skin constricted as it was stretched, reducing its diameter so that it fit snugly in the 1/8-in. hole). The tunnel in the femur was drilled from a point above the femoral insertion of the lateral collateral ligament, medially and distally to the point of insertion of the anterior cruciate ligament. The tunnel in the tibia

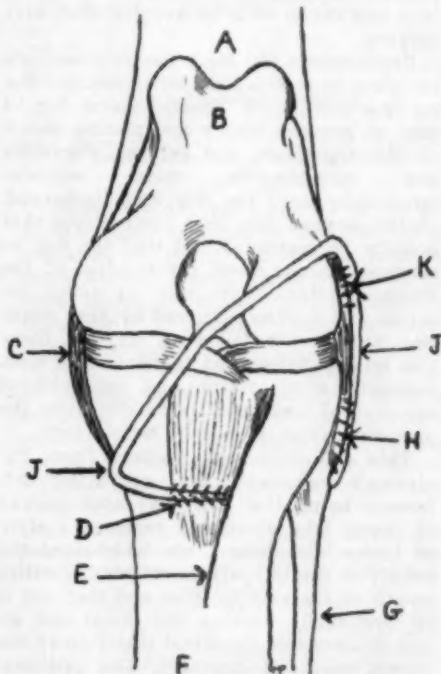


Fig. 1—Illustration of the variation of Paatsama's operation on the anterior cruciate ligament of a dog.

was drilled from the medial border of the tibial crest laterally and proximally to the tibial insertion of the anterior cruciate ligament, toward its anteromedial border.

The skin transplant then was threaded through the femoral and tibial tunnels, using a steel wire as a guide, and the distal

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end was sutured across the fascia and the insertion of the patellar ligament on the tibial tuberosity (fig. 1). The proximal end was then turned downward along the lateral collateral ligament to a point near its tibial insertion. With the joint slightly flexed, the transplant now was pulled so taut that no subluxation of the tibia could take place and was anchored with steel wire sutures to the lateral collateral ligament and fascia above and below the joint (fig. 1). Fixing the transplant in this fashion reinforced the capsule and the lateral collateral ligament and stabilized the joint laterally.

The joint capsule was closed with steel wire sutures, then subcutaneous fascia was pulled over the capsule and sutured. The skin was closed with interrupted steel wire sutures.

Prednisolone (10 mg.) was injected into the joint to reduce local inflammation. The leg was fixed in a Thomas splint for 14 days to prevent flexing and placing strain on the transplant and sutures. Penicillin and streptomycin were administered daily until the dog was discharged, on the seventh day, with instructions that activity be restricted and that the dog be returned in one week for removal of the Thomas splint. There was no undue reaction and healing occurred by first intention. One month following surgery, there was no crepitation and the dog could walk normally, climb stairs, and run without any sign of lameness. Six months after the operation, recovery seemed satisfactory.

This procedure was adapted from Paatsama's technique,¹ the only major difference being that skin was used instead of fascia lata. Paatsama removed a strip of fascia lata about 1 cm. wide along the border of the biceps femoris for the entire length of the skin incision and then cut it off proximally, leaving the distal end attached alongside the tibial insertion of the lateral collateral ligament. The proximal defect of the fascia was then sutured and the surgical repair continued essentially as above. The use of skin instead of fascia lata for a transplant may prove to be better because of the greater strength afforded by the skin.

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²Armistead, W. W.: Aseptic Veterinary Surgery: Fact and Fancy. Vet. Med., 52, Feb., 1957.

Effect of Progesterone on Egg Formation.—When progesterone, which is found in the blood of hens and roosters but not in capons, was fed to pullets (3 or 6 mg. daily), at the Florida Experiment Station, it had no effect on the time of sexual maturity, the quality of the eggs, or the gain of the birds. However, when 6.0 mg. in 0.5 cc. of corn oil was injected subcutaneously every other day, sexual maturity was completely inhibited and the birds gained 18 per cent less weight during the 11 weeks of treatment, possibly because of their lower position in the peck order.—*Poult. Sci. (Sept., 1957): 940.*

Regeneration of the Spinal Cord.—Axons can regenerate across gaps in the completely transected spinal cords of adult animals when the proximal and distal ends of the cord are maintained within a nylon tube by a single stitch. The porous tube allows adequate nutrition by diffusion of body fluids while protecting the regenerating nerves from invasion by mesenchymal cells. The plastic is inert and is rapidly surrounded by a pseudosynovium. In adult cats, the 4-mm. gap, caused by retraction of the transected cord, was united in 30 days. When used on peripheral nerves, function returned in 70 days.—*Science (Nov. 1, 1957): 929.*

Anterior Vena Cava Bleeding in the Hog.—Recently, a boar died within 20 minutes following an attempt to take a blood sample from the anterior vena cava; the second known fatality in approximately 9,500 such bleedings. On necropsy, a large blood clot was found in the anterior dorsal mediastinal space and another extended up the neck in the deep cervical fascia. There were four needle puncture holes in the right common carotid artery, one in the left common carotid, and one in the bicarotid trunk. It is suggested that one way to avoid such accidents is to be certain that the needle is not occluded by debris.—*E. D. Hubbard and R. Getty in a report from the Veterinary Medical Research Institute, Iowa State College (1956): 22.*

Many so-called "occult" fractures do not show in radiographs, yet they cause considerable pain and disability. They are most common in the radius in children after a fall on outstretched arms.—*Sci. News Letter (June 15, 1957): 372.*

Ovine Coccidiosis—Incidence, Possible Endotoxin, and Treatment

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DIAGNOSTIC PROCEDURES usually employed for the detection of coccidiosis involve examination of the feces for oocysts. A review of the life cycles of the coccidia reveals that most of the mechanical injury takes place following second generation schizogony, or first generation schizogony where only one generation occurs. This is previous to the formation of oocysts. Therefore, it is not surprising to find a large number of oocysts in the fecal material, with a complete lack of clinical signs of infection. It is probable that clinical signs and even death occur before the production of mature oocysts. This condition was observed in studies with *Eimeria arloingi* and *Eimeria niniae-kohl-yakimovi*.¹⁻³

Improved diagnostic techniques, consisting of the examination of intestinal scrapings under the phase-contrast microscope or with vital staining under a compound microscope, have resulted in the detection of clinical cases of ovine coccidiosis where no oocysts could be demonstrated. While species identification of the immature forms of the parasites is a difficult task, the recognition of the various stages within the epithelial cells can be accomplished in a relatively short period of time. These observations, together with clinical signs of soft feces or diarrhea (with or without blood), lowered feed consumption, and lassitude, indicate coccidiosis.

Since the inception of these procedures, the recognized incidence of ovine coccidiosis has increased and since treatment can be started at an earlier time, thereby reducing mortality and morbidity, client relationships have improved. While cases reported as "no diagnosis" can not all be ascribed as failure to detect coccidiosis,

there has been some correlation between the use of the improved diagnostic procedures and the reduction in number of these reports (table 1).

TABLE 1—The Relationship Between Diagnosed Coccidia Infections and "No Diagnosis" in Lambs, Previous to and Following Improved Diagnostic Techniques for the Detection of Coccidia

Year	Total laboratory records	Diagnosed coccidiosis (%)	"No diagnosis" (%)
1951	49	4.1	14.3
1952	36	13.9	11.1
1953	63	9.5	11.1
1954	46	15.2	10.9
1955	75	14.7	13.3
	Improved techniques introduced		
1956	48	25.0	4.2
1957*	51	25.8	6.4

*Only the first six months of 1957 are tabulated.

There is a general tendency in the field of veterinary medicine to discount the importance of ovine coccidiosis. However, when western lambs, which have been pastured under conditions where they have no opportunity to acquire immunity to the several species of coccidia, are placed in feedlots where oocysts are available, there is usually excessive morbidity although mortality may not be high. In a series of experiments on ovine coccidiosis, clinical and subclinical cases consistently exhibited inferior feed conversion efficiency (table

TABLE 2—Feed Conversion Efficiency of Lambs Experimentally Infected with Coccidia and of Uninfected Lambs for 24 Days Following Administration of Oocysts*

Lot No.	No. of lambs	Treatment	Feed conversion (lb. gained/lb. consumed)
1a	10	Uninfected	0.054
1b	10	Uninfected	0.063
2a	10	Uninfected	0.061
2b	10	Uninfected	0.068
3a	10	Infected	-0.139
3b	10	Infected	-0.147
4a	10	Infected	-0.102
4b	10	Infected	-0.196
5a	10	Infected	-0.185
5b	10	Infected	-0.159
6a	10	Infected	-0.488
6b	10	Infected	-0.227

*Each infected lamb given approximately 380,000 *E. niniae-kohl-yakimovi*, 410,000 *E. arloingi*, 68,000 *E. intricata*, 57,000 *E. parva*, 29,000 *E. pallida*, 38,000 *E. faurei*, and 18,000 *E. granulosa*.

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Presented before the General Session, Ninety-Fourth Annual Meeting, American Veterinary Medical Association, Cleveland, Ohio, Aug. 19-22, 1957.

2). Similar observations were made by others.²⁻⁵

Since, in therapy, dosages are based on body weight, it is important that animals receiving medication in the feed or water ingest the intended dose. A comparison of feed and water consumptions in coccidia-infected and uninfected lambs (table 3)

TABLE 3—Average Daily Feed and Water Consumed Per Pound of Coccidia-Infected* and Control Lamb†

Days following infection	Feed (lb.)		Water (qt.)	
	Infected	Control	Infected	Control
0-5	0.018	0.020	0.022	0.021
5-10	0.017	0.019	0.025	0.023
10-15	0.011	0.020	0.022	0.024
15-20	0.011	0.025	0.021	0.025
20-25	0.013	0.025	0.020	0.024
25-27	0.015	0.022	0.021	0.024

*Infected lambs given 700,000 *E. niniae*-kohl-yakimovi and 100,000 *E. faurei* sporulated oocysts. †Based on average weight for period indicated and total feed and water consumed during the period.

shows that feed consumption per pound of lamb decreased as the infection progressed but there was relatively little decrease in water consumption per pound of lamb. Therefore, it would appear that water is the best vehicle for therapeutics in ovine coccidiosis.

There is a possibility of formation of toxic substances produced during coccidiosis and of their absorption from the intestine through the injured mucosa.^{8,11} One author,¹ unable to demonstrate the formation of a toxin by the coccidia, advanced the view that the toxic substances may be formed by bacteria growing in the injured tissue.

A toxic substance present in the intestinal tract of a lamb moribund with experimentally induced coccidiosis has been reported.⁹ This finding initiated a study to determine the pharmacological nature of this substance. Another worker⁴ injected *Eimeria caviae* oocysts intradermally into guinea pigs which had recovered from infection with this *Coccidium*. Within 48 hours, an inflamed area surrounding the point of injection, together with swelling and induration, occurred. This was followed by central necrosis of the area. This same phenomenon, a typical Shwartzman reaction,¹⁰ can be demonstrated in rabbits when an intradermal injection of a bacteria-free filtrate from the intestinal contents of a lamb moribund from clinical coccidiosis is followed by an intravenous

injection of the same material in 24 hours. The two small doses, if combined, would produce no response if given in a single intravenous injection. Two similar doses, intravenously injected 24 hours apart, produce extensive lesions of hemorrhagic necrosis in the liver, spleen, and gastrointestinal tract, and bilateral cortical necrosis in the kidney.

Single lethal doses of the substance, injected intravenously into rabbits, produce no gross reactions for approximately one hour following injection, although there are some minor circulatory changes. Following this, the animals become weak and refuse to eat, after which they become ataxic. Hyperthermia develops in two to four hours and is accompanied by hyperventilation. In the terminal stages of intoxication, the animals are immobile and do not respond to stimuli. Death occurs in eight to 24 hours. Circulatory aberrations in the rabbit ear, following injections of the substance in the opposite ear, reveal alternate constriction and dilatation of arterioles over a period of several hours. These changes are indicative of an endotoxin; however, there is not enough evidence to substantiate this view.

It is possible to isolate a substance which produces similar reactions from bacteria-free homogenates of ovine or chicken coccidia oocysts. Further studies on this substance as well as the intestinal filtrate are being conducted.

These studies lead us to believe that there is a distinct possibility that much of the morbidity that occurs during ovine coccidiosis may be due to toxicity and that this toxin may be a product from the coccidia.

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Lime Poisoning in Chickens

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Three Leghorn chickens, 5 weeks old, were presented at our clinic on April 11, 1957, for observation and necropsy. They were from a flock of about 250 birds, some of which had been ill three or four days. Approximately 50 or 60 birds were affected but none had died. A good commercial ration was being fed and no medication had been given. The birds had adequate space in their quarters.

Upon questioning the owner, it was found that the litter had been damp and to combat this he had scattered plasterer's quick lime through the litter about a week prior to the first signs of illness.

The 3 birds were listless, standing with their eyes closed, heads tucked under a wing, and feathers ruffled. They had a slight diarrhea and their crops were nearly empty.

Upon closer examination, a white pseudomembrane could be seen covering the normally exposed area of the cornea.

On necropsy, there was inflammation of the mucous membrane of the mouth, nares, trachea, and esophagus; a catarrhal inflammation of the intestinal tract; and a hemorrhagic spot about 0.5 cm. in diameter on one lung.

Cultures were prepared from the livers, spleens, and hearts of the 3 birds on tryptose agar, brilliant green agar, and in

tryptose broth. All cultures were negative after 48 hours' incubation at 37 C.

A diagnosis of lime poisoning was based upon the history, lesions, and the negative bacteriological findings.

The owner was instructed to thoroughly clean the house and put in new bedding.

The eyes of each affected bird were treated with a small quantity of an ophthalmic ointment.* This was repeated in 48 hours. No birds died and the eyes returned to normal in four days.

Plasterer's lime is calcium oxide (CaO). When it comes in contact with water, it is converted to calcium hydroxide, producing considerable heat. In the process of liming the chicken house, the chickens probably came in direct contact with the lime, both as dust inhaled and on objects ingested, with a cauterizing effect on the moist mucous membranes.

*Alforone acetate ophthalmic ointment, a product of Merck, Sharp, and Dohme, West Point, Pa.

Medication and Immunity to Coccidiosis.

—When chickens 4 weeks old were infected with 50,000 sporulated oocysts of *Eimeria tenella*, 20 of 57 unmedicated birds died (of the survivors, all but 1 were immune to challenge 3 weeks later) but only 1 of 56 birds given 0.0125 per cent of nicarbazine medicated feed died (2 died on similar challenge). Thus the birds on medicated feed were protected against exposure, yet developed immunity and outgained the unmedicated birds.—*Poult. Sci.* (Sept., 1957): 1003.

Effect of Winds on Chickens.—Winds of 4 m.p.h. have improved the weight gain in feedlot cattle but have reduced egg production in hens. In tests during cold weather at the University of California, the growth rate of chickens from 2 to 10 weeks of age was reduced by winds of 3.4 m.p.h. and mortality was slightly increased by winds of 5.6 m.p.h. Normal drafts in brooder houses are of little consequence after chicks are 2 weeks old.—*Poult. Sci.* (Sept., 1957): 978.

Fluoridated Water for Chicks.—The addition of sodium fluoride to drinking water, in concentrations up to 100 p. p. m., had no apparent effect on the growth of chicks in a period of ten weeks.—*Poult. Sci.* (Sept., 1957): 1027.

Dr. Hibbs is a general practitioner in David City, Neb. The author thanks Dr. Earl M. Baldwin, Jr., for his assistance in preparing this case report.

Control of Cattle Grubs by an Orally Administered Organic Phosphorous Compound

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IN JULY, 1956, a preliminary report appeared on a compound which killed the larvae of *Hypoderma* when given to cattle by mouth. This compound, Dow ET-57 (Trolene®), has the formula 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate. In tests at Kerrville, Texas, and Corvallis, Ore., a high percentage of the grubs were killed even when the cattle were treated after the grubs had reached the back and had perforated the skin.¹ Additional reports confirmed both the efficacy and lack of toxicity of the drug.^{2,4}

The test reported here was carried out to determine the effectiveness of this drug, under ranch conditions, against the larvae of *Hypoderma lineatum* and *Hypoderma bovis*.

MATERIALS AND METHODS

Ninety-two grade Hereford steer calves were purchased from a ranch in Montana and delivered to the Huidekoper Veterinary Research Station at Big Timber, Mont., on Oct. 25, 1956. Thirteen days later, they were branded, ear-tagged, and vac-

cinated against blackleg. In addition, 44 of the 92 were each given 20 Gm. of the drug, by mouth, in the form of two 10-Gm. boluses. The calves were 6 months old and weighed an average of 338 lb.; therefore, the dose was 130 mg. of the drug per kilogram of body weight. The calves were housed in corrals and were fed native grass hay for the duration of the test.

The criterion for the effectiveness of the drug was the number of grubs which appeared in the backs of the animals during the winter and spring. Counts of grubs were made on February 15 and 26, March 20, April 3, and May 2. Only half of the calves were included in the counts on February 15 and March 20, while the other three counts included all the calves. By reference to the ear tags, the number of grubs harbored by any 1 calf could be followed over the period of the test.

RESULTS

In this area, larvae of *H. lineatum*, the common grub, do not reach the back until January; *H. bovis*, the northern grub, will generally be seen a month or two later.⁵ In the February 15 count, an average of only

TABLE I—Grub Counts in Untreated Control Calves and in Calves Treated with 20 Gm. of Dow ET-57 on Nov. 7, 1956

Date	Group	No. of animals counted	Total grubs	Average per animal	Ratio of control:treated	No. with fewer than 6
Feb. 15	Control	19	30	1.58	33:1	18
	Treated	21	1	0.048		21
Feb. 26	Control	47	479	10.2	21:1	17
	Treated	39	19	0.49		39
Mar. 20	Control	22	603	27.4	38:1	2
	Treated	26	19	0.73		25
Apr. 3	Control	45	1,118	24.9	100:1	1
	Treated	44	11	0.25		43
May 2	Control	46	942	20.5	103:1	6
	Treated	44	9	0.2		44
Maximum for Period						
	Control	47	1,369	29.1	33:1	---
	Treated	44	39	0.89		---
No. of calves having fewer than 6 grubs for whole period						
	Control	47	---	---	---	1
	Treated	44	---	---	---	43

Paper No. 409, journal series, Montana Veterinary Research Laboratory (Montana Experiment Station and Livestock Sanitary Board cooperating), Agricultural Experiment Station, Montana State College, Bozeman.

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*Dow ET-57, now termed Trolene, was supplied by the Dow Chemical Co., Midland, Mich.

1.58 grubs per animal was found in the untreated control calves. Eleven days later, there had been a sixfold increase. During the next three weeks, there was a two and a half-fold increase, the grubs reaching their peak numbers on March 20. There was a slight decrease in the number of grubs in the last two counts, an average of

24.9 per control animal on April 3 and 20.5 on May 2.

The number of grubs in the treated calves remained consistently below that in the untreated controls, the highest average count being 0.73 grubs per calf—also on March 20. The narrowest spread between the number of grubs in the untreated and treated animals was February 26 when the ratio was 21:1; the greatest spread was on May 2, a ratio of 103:1.

While the counts on a particular day are useful in following the course of an infection, a more significant figure is the greatest number of grubs found in any 1 animal during the whole season. These figures (table 1) were compiled using only the highest number of grubs counted in each animal. The untreated control calves averaged 29.1 grubs and the treated calves averaged 0.89 grubs, a ratio of 33:1. Hides containing six or more grub holes are down-graded by the meat packers.³ A comparison on this basis shows only 1 of 47 untreated calves and 43 of 44 treated calves with fewer than 6 grubs.

DISCUSSION

The recommended dosage rate for the drug is 100 mg. per kilogram of body weight. Despite a one third overdose, none of the calves showed signs of intoxication. Since it was not possible to weigh the animals individually or in groups, we do not know whether there were adverse weight changes. However, weight gains averaged 0.68 lb. per day, which was considered satisfactory for the type of hay fed.

There was no direct evidence of the effectiveness of the drug against either *H. lineatum* or *H. bovis*, but it seemed to be effective against both species. Both occur in this area.

SUMMARY

1) Of 92 grade Hereford calves 44 were given, by mouth, an average of 130 mg. of Dow ET-57 (Trolene, 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate, at 6 months of age. Counts of grubs which appeared in the back were made five times starting February 15 and ending May 2, 1957, when the calves were approximately 1 year old.

2) No signs of intoxication were observed in calves following administration of the drug.

3) The ratio of grubs appearing in the

backs of untreated to treated calves was 33:1.

4) One of 47 untreated control calves had fewer than 6 grubs, while 43 of 44 treated calves had fewer than 6 grubs in the back.

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ET-57 Approved for Grub Control

The systemic insecticide, ET-57 (Dow Chemical Co.), has been approved by both the U.S.D.A. and the Food and Drug Administration for use in cattle grub control in certain areas of Iowa, Nebraska, South Dakota, and Wyoming. The drug is given orally as a bolus or as a liquid, 1 oz. per 600 lb. of body weight. Each 1.32-oz. bolus contains about 0.5 oz. of the chemical; thus 2 boluses are required per 600-lb. animal. Cattle should not be treated later than 60 days before slaughter, and lactating cows should not be treated. Treatment should be given after the adult heel fly season ends but before the grubs appear in the backs of the cattle. Three days after treatment, the fat of the animal may contain 50 p.p.m. of the chemical, but this drops to 7 p.p.m. at day 14, and the fat is free of the insecticide in 60 days.—U.S.D.A. (Oct. 30, 1957).

A New Fly Repellent for Cattle.—Tests conducted on 5 cows for five weeks showed that daily spraying with a butadiene-furfural product (R-11), at a level 10 to 20 times that needed for effective fly control, left their milk free of detectable quantities of the repellent.—Agric. and Food Chem. (Oct., 1957): 749.

Tranquilizers are being used on nervous heifers when they are first placed in the milking line.—Wallaces' Farmer (Nov. 2, 1957): 13.

Abortion in Mares Associated with Leptospirosis

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ABORTIONS on horse breeding farms are of considerable economic importance. Viral, bacterial, and mycotic infections, and traumas account for many of them but, in some instances, no cause is determined.

Leptospirosis of cattle and swine has been given considerable attention, and there is good clinical evidence that it is associated with abortions in these species. Leptospirosis in horses has been reported by several investigators, but its relationship to equine abortions has not been fully explored.

Leptospirosis was diagnosed in horses, in 1952, when the organisms were isolated from sick individuals. One strain isolated was identified on the basis of cross-agglutination lysis studies as *Leptospira pomona*.² One mare foaled two weeks prematurely, and the foal lived only 48 hours. A marked icterus was found at necropsy. No bacteria were isolated, and evidently no attempt was made to isolate *Leptospira*.

In 1956, a series of abortions was reported in Shetland ponies in a herd in which several mares showed positive agglutination tests for *L. pomona*.¹ No laboratory studies were made to demonstrate the presence of *Leptospiras* in aborted fetuses.

This study began in the spring of 1955 when 2 mares at a stud farm aborted near the termination of pregnancy, with no evident cause. Leptospirosis was suspected, as both dams, following abortion, produced a rising agglutination titer for *L. pomona*. As these mares aborted on the week end, the fetuses remained in refrigeration for two days, making it impossible to demonstrate any *Leptospira* organisms. Bacteriological studies failed to yield any pathogenic organisms, and histological examination failed to show any evidence of virus abortion. Approximately 30 days after they aborted, both mares were bred; they conceived and produced normal foals in 1956. This is a report of further studies on this herd, made during the 1957 foaling season.

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CASE REPORTS

Case 1.—On the morning of Feb. 28, 1957, mare 60, ten months pregnant, was showing evidence of starting to foal. Examination by the veterinarian revealed a ventrodorsal rotation of a live fetus, which died during delivery. The fetal membranes were soon expelled, and little evidence of necrosis was observed. The mare was immediately given a mixture of penicillin (2,000,000 units) and streptomycin (2.5 Gm.) intramuscularly, and this was repeated on the third day. Uterine antiseptic boluses were placed in the uterus. For the next six days, the mare was watched carefully; her temperature never exceeded 101 F. Two weeks after aborting, she was in good breeding health. She was bred May 4 and is believed to be in foal.

The fetus, a well-developed female, was immediately submitted to the State Department of Agriculture Diagnostic Laboratory. There was a generalized icterus, being most evident in the hoofs, fetlock regions, oral mucous membranes, liver, peritoneum, and internal abdominal and thoracic walls. Both the thoracic and abdominal cavities contained large quantities of watery, dark red fluid. Ecchymoses were present in the lungs. The pericardial sac was distended and contained a thick, straw-colored fluid. The liver was swollen and yellowish brown. The spleen was greatly enlarged and congested. The kidneys were reddish black, soft, and "pulpy." The ovaries were unusually large and engorged, weighing 70 Gm. each, and measuring 3 inches by 2 inches. At the time of abortion, a macroscopic tube agglutination test of the serum from the dam revealed a positive reaction for *L. pomona* in an end point titer of 1:100. Twelve days later, her serum produced a positive reaction in a titer of 1:1,000.

Dark field examinations of the abdominal fluid revealed numerous motile spirochetes. Heart blood, stomach, and kidney pelvis contents, kidney emulsion, and other tissues did not reveal these organisms. Histological sections of the kidney, liver, and

ovaries, stained by Warthin's silver impregnation method, were also negative.

Two guinea pigs, each weighing approximately 150 Gm., were inoculated intraperitoneally with 1 ml. of the abdominal fluid. Attempts at recovery of *Leptospira* from these animals proved unsuccessful. No blind passages were made.

Case 2.—On March 1, 1957, mare 133, due to foal on April 21, showed signs of premature labor. Examination again revealed a ventrodorsal rotation of a dead fetus, which was delivered after correction of the malpresentation. Treatment was the same as for mare 60. Mare 133, on the date of abortion, gave a positive reaction for *L. pomona* in a dilution of 1:1,000 and, 14 days later, the titer had increased to 1:10,000. At no time did she develop a fever. She is now believed to be in foal, following breeding on May 1.

Since it was necessary for this fetus to remain in refrigeration for 48 hours, there was no chance to demonstrate the presence of *Leptospiras*. Necropsy findings were almost identical to those in the fetus from mare 60.

Case 3.—A bay Quarter mare, No. 201, 18 years old, was due to foal in July, 1957; she was found in premature labor on March 17. Examination revealed a dead fetus in anterior presentation, with both forelegs, head, and neck being retained. The malposition was corrected, and the foal extracted. It apparently had been dead for several days. The mare suffered a complete prolapse of the uterus and had to be killed. She had produced a live foal every other year since 1948, but had not conceived on alternate years. She had not previously aborted. Her blood serum, collected before her death, reacted positively with *L. pomona* antigen in a dilution of 1:1000.

Necropsy of the fetus revealed a serosanguineous ascites and hydrothorax. The liver was congested and the lungs were hemorrhagic. There was no marked icterus, and no other significant lesions. Necropsy examination, made 24 hours after the abortion, and dark field examinations and tissue sections were negative for *Leptospiras*.

SUMMARY

Three mares on one farm aborted between the seventh and tenth months of gestation. All were serologically positive for

Leptospira pomona, with 2 of the 3 showing rising titers, following abortion. Spirochetes, morphologically typical for *Leptospiras*, were observed by dark field examination of abdominal fluid from 1 of the 3 fetuses. It was the only one alive at the time of delivery. Attempts to isolate the organisms were unsuccessful.

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Observations on Hog Cholera Vaccination in Garbage-Fed Swine in Connecticut

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Garbage feeding of swine is an operation in which many practices of good husbandry and sanitation are frequently ignored. It is well known that raw garbage can contain bacterial and viral pathogens of both human and animal origin.^{1,2} These pathogens may initiate and promote enteric, pulmonary, and systemic infections when consumed by hogs.³ Detergents, spoiled food material, and various foreign objects often found in garbage can adversely affect pigs. The accumulation of feces, urine, decomposed food substances, plus excessively fluid garbage materials, often produces a deep mire in which the animals must exist. Housing and exercise areas may be poorly ventilated and lacking in sunshine. Cold, damp weather further complicates any disease problem present in the herd. Because of this involved situation, routine vaccination against hog cholera in garbage-fed herds has been considered more hazardous than in the usual farm herd.

In Connecticut, a swine disease control program has been in effect for 40 years. Individuals raising swine for sale must be licensed annually by the commissioner of agriculture. When a swine owner requests vaccination of his pigs for hog cholera, the commissioner assigns an approved veter-

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inarian to provide the service at state expense. The biological products used are furnished to the owner by the state at cost. These regulatory measures provide the state veterinarian with information on the number of pigs vaccinated, where they are located, the material used, the name of the veterinarian who administered the vaccine, and other data that may be of value in disease control. A majority of the garbage-fed swine are raised by the feeder and vaccinated at 5 to 8 weeks of age.

POSTVACCINATION PROBLEMS

In Connecticut, the majority of the swine are vaccinated during the fall, winter, and spring, when sudden weather changes, which could predispose to respiratory and other infections, are common. For many years, the simultaneous method of hog cholera vaccination, using 2 to 3 cc. of virulent hog cholera virus and 40 to 60 cc. of anti-hog cholera serum, has been used.

The two major postvaccinal problems observed following this method of vaccination are: (1) anorexia, with elevation of temperature within 24 to 48 hours, lasting for a week or longer, and stunting or a "lag" period in growth and general unthriftiness; and (2) respiratory and enteric infections clinically manifested by dyspnea and diarrhea, occurring 15 to 30 days postvaccination. This may last for four to six weeks and is usually associated with a chronic cough. On necropsy, pneumonia and enteritis are often observed.

The temperature rise and pathological changes mentioned above may not be due directly to the effects of the virulent virus, since reaction to this virus is believed to occur usually in five to 15 days. However, it evidently is associated in some way with the hazard of vaccinating garbage-fed swine.

NEWER IMMUNIZATION METHOD

Since 1953, several veterinarians in Connecticut have successfully used 2 cc. of a modified live virus (rabbit origin*) vaccine in conjunction with about 20 to 40 cc. of serum, in more than 22,000 garbage-fed pigs. Field reports indicate that this method of immunization is equally as effective in producing disease resistance as when virulent virus was used. Furthermore, it also appears that complications

have developed less frequently following use of this modified live virus vaccine. The postvaccinal changes which followed the use of virulent virus and serum do not occur when the modified live virus vaccine is used. Some of the feeders who have had pigs vaccinated by both methods believe that using the modified live virus vaccine has enabled them to market their animals two to five weeks earlier. However, the present practice of cooking garbage, together with better sanitation and supplementary feeding, have been helpful.

Effective Oct. 1, 1957, the use of virulent hog cholera virus was outlawed in Connecticut. This is based on the hazards of disease resulting from the use of this virus in a vaccination program and the definite absence of these hazards when the modified live virus is used in this State.

SUMMARY

The State of Connecticut requires swine raisers to be licensed and, on request, will assign an approved veterinarian to administer necessary biological products that are supplied to the swine raiser at cost, for vaccinating against hog cholera. Prior to 1953, 2 to 3 cc. of virulent virus and 40 to 60 cc. of anti-hog cholera serum were used. Since 1953, more than 22,000 pigs have been inoculated with 2 cc. of a rabbit-origin, modified live virus vaccine plus 20 to 40 cc. of serum. This method of vaccination has seemed as effective in producing resistance to hog cholera as the virulent virus and has not produced significant complications.

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Cholera Immunity of Pigs from Vaccinated Sows.—Of three litters from sows vaccinated with crystal violet vaccines six to nine months previously, the pigs in two large litters showed no resistance to hog cholera, whereas those in a litter of 3 resisted contact infection, probably because each acquired more immune bodies from

*Swivax, Pitman-Moore Company, Indianapolis, Ind.

the colostrum. Twelve pigs of a sow hyper-immunized by challenge with virulent virus, three months before farrowing, resisted contact infection. Pigs of a vaccinated and of an unvaccinated sow, which were exchanged at birth, all died when exposed 19 days later, but the incubation period was much longer for those nursing the vaccinated sow. The immune bodies from the colostrum may not have been fully utilized because of diarrhea in these pigs.—*Vet. Bull. (Oct., 1957): Item 3004.*

New Jersey Will Cook Garbage.—Effective Jan. 1, 1958, a new state (N. J.) law makes it mandatory to cook garbage before feeding it to swine. (The U. S. D. A. report for Aug. 31, 1957, states that 57% of the 68,423 swine being fed raw garbage in the United States were in New Jersey.)—*Farm Serv. News, New Jersey Dept. of Agric., Sept., 1957.*

How Antibiotics Promote Growth.—The greatest growth response to antibiotics is in animals on rations inadequate in any of several vitamins or proteins. However, the growth-promoting effect would not seem to be due to a vitamin-like action because of the nonspecific nature of the deficiency and the widely different chemical structure of the antibiotics; nor is it likely due to the effect of the antibiotic on intestinal microorganisms, since bacitracin and carbomycin B are effective only when given parenterally (oxytetracycline is effective only when given orally).

Since antibiotics have a marked effect on chickens raised in old environments (which probably have subclinical infections), as well as in animals on inadequate diets, (which probably have lowered resistance to infection), it may be that the growth effect of the antibiotic is due to alleviation of general subclinical infections.—*Nutr. Rev. (Nov., 1957): 348.*

Antibiotic Effect on Intestinal Weight.—Aside from growth stimulation, the most consistent effect of antibiotics on the body of chicks has been a reduction in intestinal weight. This effect is apparent in three days with doses of antibiotics too small to result in growth stimulation. Rats fed raw soybean meal gained only 80 per cent as fast as those fed the autoclaved meal, but when antibiotics were fed with each, growth

was equal; the growth-depressing effect of the raw meal was completely overcome. Apparently, the influence of antibiotics on intestinal weight is not directly related to their growth-stimulating action.—*Nutr. Rev. (Nov., 1957): 336.*

Antibiotic and Sulfonamide for Coccidiosis.—The addition of 100 Gm. of chlor-tetracycline per ton of mash offset the retardation of growth caused by 0.125 per cent of sulfamethazine (per ton of mash) in the treatment of coccidiosis in chickens; together they prevented mortality from infection with *Eimeria tenella*, and growth was better than that of healthy, untreated controls.—*Poult. Sci. (Jan., 1957): 159.*

Antibiotics for PPLO.—*In vitro* tests with six antibiotics against the pleuropneumonia-like organism (PPLO) showed them effective in the following order: erythromycin, oxytetracycline, magnamycin, chlor-tetracycline, streptomycin, and hygromycin, the latter having little effect.

In vivo, erythromycin (50 to 100 mg.) injected directly into the infected sinus, from one to six months after experimental infection, resulted in complete disappearance of the swelling in 18 of 20 turkeys after four weeks. The other 2 birds had been infected the longest and were given the smaller dose.—*L. C. Ferguson et al. in Poult. Sci. (July, 1957): 748.*

Effect of Antibiotic on Ascaris Egg Production.—One shoat given 66 mg. of chlor-tetracycline (Aureomycin) daily (10 mg./lb. of feed) had a daily count of 1,600,000 *Ascaris suum* eggs for each female ascarid recovered at necropsy. A second shoat given 284 mg. daily had the same egg count per female ascarid. The third shoat given no antibiotic showed a lower egg production per female ascarid.—*Vet. Bull. (July, 1957): Item 2131.*

Encephalomyelitis Virus from Insect Vectors.—Eastern equine encephalomyelitis virus was isolated from pools of mosquitoes and Culicoides in Georgia. Venezuelan equine encephalomyelitis, which produced the disease in man and horses, was isolated from Culicoides in Ecuador.—*Science (March 1, 1957): 395.*

Intravenous Use of Phthalofyne (Whipcide) in the Treatment of Canine Whipworms

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THE ANTHELMINTIC COMPOUND, 3-methyl-1-pentyn-3-yl sodium phthalate (phthalofyne or Whipcide[®]), is effective against canine whipworms (*Trichuris vulpis*) when given in oral doses of 200 to 250 mg. per kilogram of body weight.^{1,2,3,7,8} Previous reports indicate that the drug at these dose levels is more effective than n-butyl chloride^{6,7,8} in the treatment of canine whipworm infections.

Preliminary observations during tests with an injectable form of the drug indicated not only that it was safe to administer phthalofyne intravenously, but that it appeared to be effective against whipworms.

Because ease of administration and adequate dosage are important to the veterinarian, the present investigation was made to determine whether it might be practical to treat dogs with clinical whipworm infections by giving phthalofyne intravenously.

There are several advantages to the intravenous administration of a drug: (1) The drug can not be lost by vomiting; (2) food in the intestine does not mechanically interfere with drug action; (3) some dogs which vigorously resist oral dosing offer no resistance to intravenous injection.

per dog,² it was decided that the inclusion of additional untreated dogs as controls was not necessary.

A 50 per cent solution of phthalofyne was used for all dogs. The solution was injected rapidly (5 to 10 sec.) in the cephalic vein through a 20-gauge needle. There was no special preparation of the dogs prior to treatment. Clearance or non-clearance of parasitism was determined at necropsy seven days after treatment.

To test the therapeutic effect, different groups of dogs were given doses of 300, 250, and 200 mg. per kilogram of body weight, respectively. Also, doses in excess of 300 mg. per kilogram were given to test the safety of the intravenous route of administration.

RESULTS AND DISCUSSION

Of 30 dogs which received 300 mg. of the drug per kilogram of body weight, most exhibited one or more side effects; 3 dogs (10%) vomited and 19 (62.3%) developed slight to marked ataxia, which was followed in most instances by a short period of depression. The latter manifestations became apparent soon after injection and persisted for one to three hours. They were not considered serious, and no lasting effects were observed. At necropsy, 29 (96.6%) of the 30 dogs treated with 300 mg. per kilogram were completely free of

TABLE 1—Results of Injecting Whipworm-Infected Dogs with 50 Per Cent Phthalofyne Solution

Dose	No. of dogs treated	Dogs with whipworms at necropsy	No. cleared (%)	Side effects (No.)	Side effects (%)
300 mg./kg.	30	1*	97	ataxia (19) emesis (3)	63 10
250 mg./kg.	12	0	100	ataxia (5) emesis (2)	42 17
200 mg./kg.	12	4†	67	ataxia (5)	42

*Fourteen whipworms present; †Average of 10 worms present per dog.

MATERIALS AND METHODS

Fifty-four dogs infected with *T. vulpis* were selected from a large reservoir of mongrels on the basis of fecal flotation tests. Since earlier data on 50 similar dogs that were infected with whipworms had revealed an average of 44 whipworms

whipworms (table 1). The cecum of the remaining dog contained 14 whipworms.

Because of the high clearance rate with doses of 300 mg. per kilogram, it was felt that lower doses might be given without loss of efficacy. Therefore, two additional groups of 12 dogs each were treated with 250 and 200 mg. per kilogram, respectively

From the Research Farm of the Pitman-Moore Co., New Augusta, Ind.

[®]Trade name, Pitman-Moore Co., Indianapolis, Ind.

(table 1). Of the 12 dogs which received 250 mg. per kilogram, 5 (42%) became mildly ataxic and 2 (17%) vomited. Extremely high efficacy was indicated by the fact that all of the dogs were found to be free of whipworms at necropsy. When the dose was reduced further, to 200 mg. per kilogram, 5 (42%) became slightly ataxic but none vomited; at necropsy, 8 (67%) were free of whipworms.

These data indicate that phthalofyne given intravenously is effective in the 100 per cent range of clearance at a dose between 250 and 300 mg. per kilogram. This degree of efficacy compares favorably with results other investigators have reported following oral treatment with this drug at 200^{1,2} and 250¹ mg. per kilogram, and is considerably more impressive than results reported for *n*-butyl chloride⁴ or toluene⁴ at recommended therapeutic levels.

SAFETY OF ADMINISTRATION

The effect of phthalofyne, given intravenously in a single dose considerably greater than 300 mg. per kilogram, was tested in two groups of normal dogs. In one group of 5, each dog was given a single dose of 600 mg. per kilogram in 50 per cent solution, with the following results: (1) 4 of the 5 vomited in four to seven minutes; (2) 5 became ataxic in five to 15 minutes; (3) 4 became depressed in two to five hours.

These effects disappeared in all dogs between four and six hours postmedication. Although ataxia and depression were severe in 3 of the 5 dogs, there was no mortality and they all appeared healthy and had good appetites during a subsequent seven-day period. Some dogs ate well while still ataxic.

To further test the safety of this drug, intravenous doses of 300 mg. per kilogram were given daily to 3 dogs for three consecutive days, with the following results: (1) None of the dogs vomited; (2) all 3 became slightly to moderately ataxic following each dose; (3) 2 became slightly depressed following the first dose.

All of these dogs appeared normal on the morning after each dose and for a subsequent seven-day period. No loss of appetite was evident.

CASE REPORT

To illustrate further the effective action of the drug, even in massive infections of

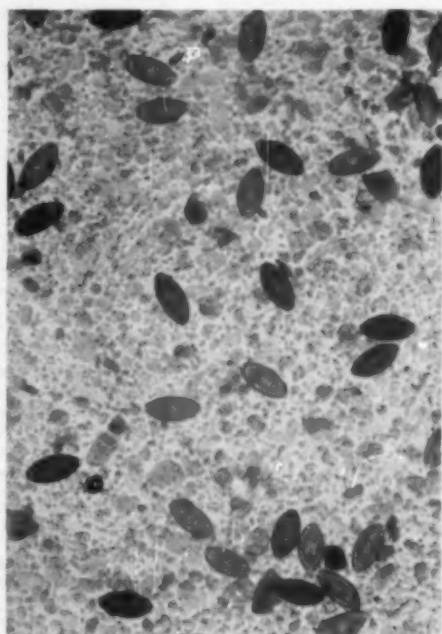


Fig. 1—Micrograph of the ova of *Trichuris vulpis* (canine whipworm) as shown in the fecal flotation test; taken from the feces of a dog. x 100.

whipworms, the following case report is presented:

A 23-lb. male Cocker Spaniel, 12 years old, had diarrhea for about two months. The condition gradually became more severe—the feces became mucoid and later showed evidence of hemorrhage. After fecal examination revealed an extremely high number of whipworm ova (fig. 1), phthalofyne (3.5 Gm.) was given intravenously. The patient soon became ataxic and depressed, but was normal the following morning and passed semisolid feces containing 1,184 whipworms. Several fecal flotation tests made after this treatment were negative for whipworm ova and the feces rapidly became normal in consistency.

SUMMARY

A 50 per cent solution of phthalofyne (Whipcide) given intravenously eliminated all whipworms from 12 dogs given 250 mg. per kilogram of body weight and from 29 of 30 dogs (96.6%) given 300 mg. per kilogram. Transient depression, nausea, and ataxia were the side reactions observed. Increasing the dosage to 600 mg. per kilo-

gram increased the severity of the side reactions without causing any permanent damage to the test dogs. In 1 clinical case, an aged patient passed 1,184 whipworms following a single dose of 300 mg. per kilogram, with prompt relief of chronic diarrhea; the ova were not found in subsequent fecal examinations.

Phthalofyne is the first anthelmintic known to have a high degree of effectiveness against intestinal helminths when given intravenously. The clinical advantages of this mode of administration are apparent.

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- ⁷Knowles, A. T., Knowles, J. O., and Knowles, R. P.: A New Treatment for Canine Whipworms. *Southwest. Vet.*, 8, (Winter, 1955): 174-175.
- ⁸Magrane, H. J., Jr.: Treatment of Canine Trichuriasis with Whipcide. *North Am. Vet.*, 35, (1954): 761-763.

Whipworms and Enteritis in Swine.—Three of 4 pigs infected with whipworm eggs died of enteritis within three months, whereas control pigs under similar conditions remained healthy. The whipworms were cultured in antibiotic solution to kill bacteria they might have harbored.—*Prairie Farmer* (Nov. 2, 1957): 46.

Chlorpromazine Therapy for Tetanus.—Two Thoroughbred horses with severe cases of tetanus were successfully treated in Australia.

A 1,000-lb. stallion was given 3 million units of penicillin at three-day intervals, and chlorpromazine intramuscularly twice daily (500 to 900 mg. per day) for 11 days. Marked muscular relaxation occurred 15 minutes after the first dose, and generalized spasm was not again evident except

on the critical sixth day. Painful swellings developed at the sites of injections but subsided in five days.

A foal, 9 days old, was unable to rise alone and could scarcely nurse. It was given antitoxin, penicillin every three days, and chlorpromazine (100 to 150 mg.) intramuscularly daily for eight days. Excellent muscular relaxation was obtained and the foal was able to nurse normally. Both animals recovered.—*A. R. Tait and F. B. Ryan in Austral. Vet. J.* (Sept., 1957): 237.

Ox Warbles in the Esophagus.—Of 2,160 young cattle examined, in France, *Hypoderma lineatum* larvae were found in the esophagus of 483; some were in the mucosa where they produced inflammation, and some were in the musculature. From August to January, when they were most prevalent in the esophagus, there were none on the back; and during April and May, when the grubs were in the back, none were found in the esophagus.—*Vet. Bull.* (Oct., 1957): Item 3028.

Piperazine for Small Animals.—Cats showed no toxic effect (1 vomited) from piperazine citrate (530 mg./kg. of body wt.) given by stomach tube, or from piperazine adipate (675 mg./kg.) fed in meat. Dogs were not affected by 1,200 mg./kg. of piperazine adipate given *per os*, but were drowsy, anorectic, and staggering after 1,500 mg./kg. For cockerels, single oral doses of 1,013 mg./kg. of the adipate and a total of 3,946 mg./kg. in three days were nontoxic.—*Vet. Bull.* (Oct., 1957): Item 3054.

Grass Sward for Hens.—When breeding hens were allowed to run on grass lots, in England, and compared with control groups with no grass, there was no saving in the food consumed and no increase in egg production, or in fertility and hatchability of the eggs, but there was a marked increase in the vitamin A, riboflavin, and pigment content of the eggs.—*Poult. Sci.* (July, 1957): 780.

Bluetongue in Morocco.—Bluetongue was recognized for the first time in Morocco from October to December, 1956. Up to 20 per cent of the sheep in several flocks were affected, and there were a few doubtful

cases in cattle, but goats were resistant. The disease was not easily induced due to the low susceptibility of Moroccan sheep; after 13 to 18 days, there was usually only a mild fever. A polyvalent vaccine was used on many sheep but in one flock of 2,000, 159 died after immunity should have been established. Bluetongue may not become established in Morocco; infected animals will be slaughtered, infected flocks isolated, and an attempt made to control insects.—*Vet. Bull. (Oct., 1957): Item 3002.*

Fever Tick Found in Florida.—The cattle fever tick was found in Florida, in April, for the first time since the quarantine was lifted in 1950. It is a potential carrier of piroplasmosis and also injures cattle by sucking large amounts of blood. A vigorous eradication program, consisting of dipping cattle and horses in a tickicide at regular intervals, should eradicate the disease within a year. The 15-state eradication program, begun in 1907, was successfully terminated in 1943, and a narrow buffer zone of 550 miles along the Mexican-Texas border still remains under federal quarantine.—*U.S.D.A., Nov., 1957.*

Development of the Stomach of the Goat.—Dissection of 31 goats killed at intervals from birth to 20 weeks of age, both pre- and postweaning, showed that at birth the rumen was small and located in the anterodorsal part of the abdominal cavity. It developed rapidly after weaning (at 72 days) and in 16 to 20 weeks occupied three fourths of the abdominal cavity, as in the adult. The reticulum developed mostly after weaning. Of the four parts of the stomach, the omasum developed most slowly. Even at 10 weeks postweaning, it seemed almost functionless.

At birth, the abomasum was large and lay on the abdominal floor. Its relative size gradually reduced and it moved to the right of the median plane as the rumen enlarged. At birth, the liver was between the stomach and the diaphragm on both sides of the median plane; it gradually moved to the right.

The intestines, at birth, were chiefly in the left half of the abdominal cavity but, after weaning, they too were pushed to the right. The coiled colon in the suckling goat was cylindrical but became flattened after weaning.

The changes in the stomach were directly affected by the nature of food. The development of the rumen portion was retarded by prolonged suckling, whereas forced weaning before 16 days often resulted in its misgrowth.—*H. Tamate in the Tohoku (Japan) J. of Agric. Res. (Jan., 1957): 209.*

Avian Brucellosis.—Infection of domestic and some wild birds with *Brucella* is apparently more widespread and frequent than was believed, especially in eastern countries. Guinea fowl seem most susceptible. All three types of *Brucella* were found in a survey in Poland, but *Brucella melitensis* seems the most pathogenic. The disease is usually subclinical, but with some wasting and drop in egg production. Degeneration may occur in the liver, spleen, heart, and lung tissues. It can be diagnosed with the agglutination test.—*Vet. Bull. (Oct., 1957): Item 2940.*

Zinc and Round Heart Disease of Chickens.—Round heart disease was found in 3.5 per cent of chickens examined at a German laboratory in 1956. Two birds, from a flock where 45 of 85 had died after their food was prepared in a zinc-lined cooker, had a 0.3 per cent zinc content in their internal organs. However, the disease was not produced by feeding 500 mg. each of zinc oxide and zinc acetate per bird daily, although the birds were severely poisoned.—*Vet. Bull. (Oct., 1957): Item 3094.*

Coumestrol, a New Estrogen.—A new estrogen, coumestrol, has been isolated from Ladino clover and is also present in alfalfa and strawberry clover. It is 30 times more active than genistein but it is less powerful in its effect on animals than is stilbestrol, the synthetic estrogen. Most of the estrogen is in the leaves. Alfalfa silage made with blackstrap molasses contains more estrogen than alfalfa in pasture or alfalfa ensiled without the molasses.—*Agric. Res. (Nov., 1957): 11.*

A Shetland hinny has been reported on an Illinois farm. The dam was a Mexican burro, the sire a Shetland pony. (A hinny is a reverse hybrid to a mule.)—*Prairie Farmer (Aug. 17, 1957): 6.*

The Formulation of Milk Substitutes for Dairy Calves

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FOR MANY YEARS, it was generally accepted that none of the so-called "milk substitutes" (replacers) were equal to fresh whole milk as the principal item in the diet of baby calves from birth to 2 months of age. Normally, calves which were changed from whole milk to any of the various milk replacers during the first two months of their lives went through a period of retarded growth before adjusting themselves to the milk replacer diet. During this period of adjustment, they were much more susceptible to disease than during times of more rapid growth. Therefore, the breeder of valuable cattle generally relied on nurse cows or fresh whole milk for his baby calves.

Several developments in recent years have contributed to improved experience with milk replacers, so that at this time many dairymen are reporting more satisfactory results with milk replacers than with fresh whole milk. These developments include: (1) the use of antibiotics, (2) the development and use of stabilized vitamin supplements, and (3) the increased use of dried milk products in the milk replacer formulas.

Because it had been observed that the most successful of the milk replacer formulas were those that were high in milk products, the experimental rations which have been formulated at the Texas Agricultural Experiment Station have been made almost entirely of nonfat dried milk and dried whey. Research then demonstrated that, in milk replacers prepared principally from dried milk products, complicated formulas containing numerous ingredients are unnecessary.

Nutritionally, dried skim milk and dried buttermilk supply the essential amino acids, the water-soluble vitamins including vitamin B₁₂, the necessary minerals, especially calcium, and an excellent source of energy in the form of milk sugar (lactose). Dried whey is approximately 65 per cent lactose and is a good source of the minerals and vitamins found in the skim milk. It is, however, much lower in protein. Although

milk is low in iron, the calf is apparently born with sufficient reserves to carry it through until it begins to get its iron from other sources.

In addition to the nutrients mentioned, only the fat-soluble vitamins, A and D, have been demonstrated to be essential in the diets of young calves. Although it is assumed that some fat is essential, actual requirements have not been established.

PREPARATION OF A FORMULA

The following formula was the first used in the recent studies at the Texas Station and its successful use was reported.¹ As normally prepared, it contained 55 lb. of nonfat dried milk, 45 lb. of dried whey, 1 lb. Aurofac 2A,* and 0.25 lb. of Quadrex 10.† The vitamins were stabilized in "microcrystalline" wax. Although this preparation contained very little fat, over 106 heifer calves were fed successfully without a casualty. The amount fed varied with the size of the calf at birth and ranged from 0.4 to 0.5 lb. of the dry material mixed with 3.0 to 4.0 lb. of warm water per feeding. It was fed to calves from the time they were 5 to 60 or 90 days of age.

Feeding dairy calves on either milk or milk products must be done with considerable care because almost any variation in the quantity, composition, or temperature may result in diarrhea, especially in the smaller calf. Opinions differ as to the cause of this type of diarrhea, but it is generally believed that the lactose is largely responsible. At any rate, whey has been blamed more often than the other milk products, apparently because of its high lactose content. Therefore, the addition of fat to the formula appeared desirable because (a) the general health or appearance of the calves might be improved slightly as a result of feeding the fatty acids, or (b) the higher energy value of the rations containing fat would enable the feeder to reduce the amount of feed offered and thereby reduce the likelihood of diarrhea.

¹Anon.: A Simple Milk Replacer Formula for Dairy Calves. Texas Agric. Exper. Sta. Progress Report No. 1710.

*Supplied 3.7 Gm. chlorotetracycline.

†Supplied 1 million I.U. vitamin A and 50,000 U.S.P. Units vitamin D.

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In addition to cost, the principal problem involved in using fat in feed formulas is the difficulty encountered in mixing fat with the other ingredients or with water. In attempting to find a fat that would mix readily, we tried a new commercial product called Marcol B 75,§ prepared from cottonseed oil soap stock. This product is principally the methyl esters of the fatty acids from the soap stock but also contains considerable quantities of pigments, some neutral fats or oils, phospholipids, sterols, and other components of the crude oil.

In preparing experimental milk replacer formula No. 2, 10 lb. of the dried whey in the formula given above was replaced by 10 lb. of the cottonseed oil product. This material mixed readily with the dry ingredients and the final mixture suspended uniformly in warm water. The formula was accepted readily by the calves, and controlled growth studies indicated that the growth rate of calves fed the second formula were slightly superior to those of calves fed formula 1.

RESULTS AND DISCUSSION

The most surprising result was its effect on diarrhea. Calves which scoured on normal intakes, or which were deliberately induced to scour by feeding larger than normal quantities of formula 1, quickly recovered when changed to the same amounts of formula 2. Within 24 hours, the fecal material began to turn dark in color, apparently as a result of the pigments in the cottonseed oil product, and became firmer in appearance. Within 48 hours, most of the calves had recovered completely from the diarrhea. Experimentally, this product has been separated into the pigment and the methyl ester fractions and, while both fractions appeared to have some beneficial effect on diarrhea, neither fraction was equal to the complete product. To date, it has not been determined what portion of the product is responsible for its effect, but it is apparently associated with the sludge-like material which tends to settle to the bottom of the container in which the product is stored.

Toxicity tests have been conducted under the supervision of the School of Veterinary Medicine at Texas A. & M. College but no detrimental effects were revealed when ten times the normal intake was fed.

Other fats have been studied, including

butterfat, lard oil, tallow, and purified forms of the cottonseed oil product. None of these have shown any beneficial effects on diarrhea and, in most cases, have actually increased the severity of the diarrhea.

With the milk replacers discussed in this paper, expensive dry feeds or calf starters are unnecessary. A mixture of farm grains, bran, and cottonseed meal containing not less than 20 per cent protein has been just as effective as more elaborate preparations. The best quality legume or grass hays are always recommended for calves because they will not eat the coarse-stemmed hays.

A New Source for Vitamin A.—By mating specially selected strains of the mold, *Choanephora cucurbitarum*, the carotene yield has been increased four- to fivefold, and further increased by improving the culture medium. Carotene in the fungus can be concentrated, producing a bright orange filter cake which contains up to 0.5 per cent beta-carotene. It can be ground for use in feeds and is biologically available.—*Agric. Res. (Nov., 1957): 16.*

Cottonseed Feed and Egg Discoloration.—Hens at Michigan State University, which were fed rations containing 2.5 per cent of crude cottonseed oil, produced eggs which, after six months of cold storage, had pinkish albumens and salmon-colored yolks. There was also slight discoloration when hens were fed cottonseed meal. The causative agent was not determined but it was contained in the oil, a trace of which remained in the meal.—*Poult. Sci. (July, 1957): 798.*

Chlorophyll, Green Yolks, and Chick Growth.—Sodium copper chlorophyllin fed to 8 hens (250 to 1,000 mg. daily) resulted in green yolks in four to 14 days. It also significantly increased the growth rate when fed (0.1% of the diet) to cockerels up to 12 weeks of age.—*Vet. Rec. (Jan. 22, 1955): 86.*

Antibiotics in Agriculture.—In 1956, sales of antibiotics for nonmedical uses, such as animal feed supplements, food preservation, and plant disease control, reached 700,000 lb.—total value, \$27 million.—*Agric. and Food Chem. (Oct., 1957): 725.*

§Marco Chemical Co., Fort Worth, Texas.

Editorial

Research Fellowship Program Needs Support

If the AVMA Research Fellowship Program is to continue as an Association-supported activity, then AVMA members must assume a greater responsibility in providing the finances required for its operation.

In the last fiscal year, donations to the Research Fund totaled \$34,457.75. Of this amount, only one fourth was contributions from individual members. Grants from commercial concerns accounted for nearly 62 per cent of the receipts.

Support for the Research Fellowship Program from commercial sources is encouraged, and it will do much to insure the growth and stability of this program. However, we should not increasingly depend on industry or other sources of support to maintain an Association activity.

Early in its development, it was decided that the profession should be given an opportunity to demonstrate its belief in, and support of, the Fellowship Program before a general appeal was made for contribution to the Research Fund. As a result, about \$106,000 was raised during the first few years, largely as contributions from veterinarians, constituent associations, and through the women's auxiliaries.

There is no reason to believe that the attitude of the profession has changed with respect to pride of accomplishment in supporting this work. The recent interest shown by commercial concerns in contributing to the Research Fund is an indication of their recognition that it is a worthy project. However, grants from these sources should not supplant support from individual veterinarians if the program is to remain a project of the profession, under its direction and administration.

There is, however, the possibility that individuals may permit their participation in the program to go by default, unless the members respond in greater numbers to the appeals for annual contributions to the Research Fund.

With the profession expanding numerically and in prestige, should there not be an equal expansion in worthy programs which it supports?

The AVMA Research Trust Fund is used

exclusively to defray the expenses of veterinarians engaged in postgraduate study on a fellowship basis. The progress of this activity has been reported in the *JOURNAL** in articles describing the program, in news about AVMA Research Fellows, and in annual reports of the "Business Proceedings" of the annual meeting.

RESEARCH FELLOWS

During the past year, eight veterinarians completed their Research Fellowship studies under AVMA support: W. E. Ribelin at the University of Wisconsin; C. H. Bridges at Texas A. & M.; H. W. Reuber at Iowa State College; R. F. Johnston at the University of Minnesota; Barbara Kingscote at Ontario Veterinary College; L. A. Griner at the University of California; W. D. Carlson at the University of Colorado; and R. H. Dunlop at the University of Minnesota.

Eight additional veterinarians are engaged in AVMA Fellowship studies at the present time. They are: J. W. Davis at Purdue University; P. H. Coleman at the University of Wisconsin; E. N. Moore at Cambridge University, Cambridge, England; C. E. Whiteman at Iowa State College; W. C. Bowie at Cornell University; J. D. Mongeau at Ontario Veterinary College; M. Ristic at the University of Illinois; and J. C. Hruska at Michigan State University.

The recipients of AVMA fellowships for 1958-1959 will be selected by the Fellowship Committee of the AVMA Research Council early in 1958.

The number of veterinarians offered opportunities to engage in graduate study will depend to a large extent on donations by AVMA members to the Research Fund. The applications for fellowships are increasing and the program is too vital to permit any recession. The program must go forward whether it is supported primarily by AVMA members or by commercial and other outside agencies.

This issue is in two parts. Part 2 is the Proceedings of the Business Sessions of the Ninety-Fourth Annual Meeting held in Cleveland last August. Part 2 is mailed only to members of the AVMA.

*See *JOURNAL* issues: June, 1952; February, March, April, May, June, August, and September, 1955; January 15, February 15, March 1, October 1, October 15, and December 1, 1956.

ABSTRACTS

Distribution of Micrococci in Milk Samples

Control measures against *beta* toxin micrococci in mammary glands were applied over a 12-year period in a herd of 250 milking cows. Distribution of micrococci and other bacteria in 17,927 milk samples, collected during the last two years, is discussed.

When the investigation was started, 90 per cent of coagulase-positive micrococci could be detected by occurrence of *beta* toxin in cow blood agar plates but, as reduction of *beta* toxin strains was achieved, there was an increase in occurrence of pathogenic micrococci which did not produce the readily detectable *beta* toxin. Thus, it became necessary to employ the coagulase test on an increasing percentage of micrococcal isolates in order to demonstrate the pathogenic strains.

The mean distribution of bacterial types in milk samples obtained over the last two years was: micrococci (70.8%), coliforms (11.2%), streptococci (8.5%), *Pseudomonas aeruginosa* (0.07%), *Corynebacterium pyogenes* (0.2%), and other bacteria (8.2%). Although the micrococci comprised 70.8 per cent of the bacterial isolates, only one fourth of the strains from cows in first or second lactation were coagulase-positive but, with advancing lactation age, the percentage of strains giving a positive coagulase reaction increased to 46 per cent of the micrococcal isolates.

Observations on the Whiteside reaction in milk, a presumptive test for abnormal leukocyte count, as related to flora in 2,616 milk samples, revealed the occurrence of positive reactions as follows: no significant bacteria (14.5% +), coagulase-negative micrococci (20.0% +), nonagalactiae streptococci (23.0% +), coliform organisms (41.0% +), coagulase-positive micrococci (52.0% +), and *Streptococcus agalactiae* (53.0% +).—[O. W. Schalm and J. Lasmanis: *Distribution of Micrococci and Other Bacteria in Milk Samples from a Single Dairy Herd After Twelve Years of Mastitis Control*. *Am. J. Vet. Res.*, 18, (Oct., 1957): 778-784.]

Accessory Glandular Tissue in the Bovine Teat Canal

Serial section studies were made on the teats of 11 dairy cows to determine the incidence and morphology of accessory glandular tissue (periductal lobules), which was associated with the teat canal. Each of 2 of the 11 cows had one teat that contained a periductal lobule associated with the teat canal. One other teat of 1 of these 2 cows contained a bifid teat canal. The main duct of each periductal lobule contained a stratified squamous epithelium, while the remainder of the duct system was glandular in nature. The presence of a milk-protein precipitate and a considerable number of leukocytes in the glandular lumina of each periductal lobule was taken as evidence of some secretory activity.—[Alvin F. Weber, Donald S. Wyand, and Mary G. Phillips: *Studies of the In-*

cidence and Morphology of Accessory Glandular Tissue in the Teat Canal of the Bovine Mammary Gland. *Am. J. Vet. Res.*, 18, (Oct., 1957): 761-763.]

Dictyocaulus Viviparus Infections in Calves

Three forms of lungworm disease were studied; (1) fatal and nonfatal initial infections, (2) recovered animals, and (3) recovered animals subsequently challenged with viable lungworm larvae. The clinical changes and gross and microscopic lesions associated with each form of the disease were described.—[C. F. Simpson, A. E. Wade, W. R. Dennis, and L. E. Swanson: *Pathological Changes Associated with Dictyocaulus Viviparus (Bloch) Infections in Calves*. *Am. J. Vet. Res.*, 18, (Oct., 1957): 747-755.]

Salmon Poisoning in Dogs

Of 62 Beagle dogs affected with experimental salmon poisoning disease, 49 had lesions in the central nervous system. Engorgement of meningeal vessels was a common gross finding, especially in dogs that died. Microscopic changes were observed in 34 (91%) of 37 dogs that died, and in 15 (71%) of 21 dogs killed during advanced stages of the disease. These changes consisted of: (a) slight to moderate accumulation of mononuclear cells in the leptomeninges, which were most intense over the cerebellum; (b) cellular exudative and proliferative changes in sheaths of small and medium-sized intracerebral blood vessels; and (c) focal collections of glia or mesenchymal cells, or both (nodules).

Intracerebral lesions were less frequent and less prominent than the leptomeningitis and were found most often in the cerebral cortex, brain stem, and cerebellum. Lesions similar to those in the brain were present in the neurohypophyses of 11 dogs. The spinal cord was not involved except for slight meningeal infiltration and an occasional vascular lesion in some animals.—[W. J. Hadlow: *Neuropathology of Experimental Salmon Poisoning of Dogs*. *Am. J. Vet. Res.*, 18, (Oct., 1957): 898-908.]

Studies on Avian Encephalomyelitis. I.

Egg adaptation of avian encephalomyelitis (AE) virus was achieved by intraocular injection of 11-day-old chicken embryos. Infection manifested itself, after seven to nine days, as embryonic inactivity of varying degrees, including death. Histopathological changes consisted of encephalomalacia and muscular dystrophy (*Science*, 124, (1956): 80). Fifteen virus passages were made, and identification was accomplished by serological, pathological, and histological tests. Convalescent serum inhibited growth of the egg-adapted virus and contained 500 to 5,700 virus-neutralizing doses. Virus titrations indicated 10⁷ embryo infective doses. Embryos from sources other than those in which adaptation was first achieved were resistant to infection; this resistance was believed to be due to passive

immunity.—[F. W. Sumner, E. L. Jungberr, and R. E. Luginbuhl: *Studies on Avian Encephalomyelitis. I. Egg Adaptation of the Virus*. *Am. J. Vet. Res.*, 18, (Oct., 1957): 717-719.]

Chicken Embryo Susceptibility to Encephalomyelitis

Hatching eggs (3 dozen) were collected from each of 119 flocks of chickens and used for titration of an egg-adapted strain of avian encephalomyelitis (AE) virus. Titration end points ranged from $10^{-8.0}$ to $10^{-8.5}$. Flocks without a history of having produced AE-infected chicks gave embryo titers of 10^0 , flocks with a definite AE history gave embryo titers of $10^{-8.5}$ or below. About 69 per cent of the flocks tested had no history of AE, although they produced embryos somewhat resistant to infection. Egg yolk and parent stock serum from a flock considered "susceptible," on the basis of the above titrations, failed to neutralize AE virus in eggs, whereas similar materials, including serum from day-old progeny chicks, from an "immune" flock neutralized the virus.—[F. W. Sumner, R. E. Luginbuhl, and E. L. Jungberr: *Studies on Avian Encephalomyelitis. II. Flock Survey for Embryo Susceptibility to the Virus*. *Am. J. Vet. Res.*, 18, (Oct., 1957): 720-723.]

In Vitro Cultivation of Tissues

A "standard method" for the *in vitro* cultivation of the tissues of domestic and laboratory animals is described in detail. The use of such a method permits the growth of cells in tissue culture suitable for the isolation, identification, and assay of many viral agents particularly identified with the field of veterinary medicine.—[S. H. Madin, P. C. Andriese, and N. B. Darby: *The in Vitro Cultivation of Tissues of Domestic and Laboratory Animals*. *Am. J. Vet. Res.*, 18, (Oct., 1957): 932-941.]

Toxin Production, Clostridium Botulinum Type C

Several variables influencing the production of *Clostridium botulinum* type C toxins and toxoids were studied. It was found that strains vary in their suitability for toxin production, and that the medium used and the method of cultivation were important factors. Formalized adsorbate toxoids, prepared from atoxigenic cultures, were unable to stimulate resistance in mice. Whole culture toxoids, prepared from toxigenic cultures grown in a dialyzing membrane, consistently immunized mice against more than 40,000 I.D.₅₀. Similarly grown cultures, without the dialyzing membrane, elicited a poorer response in mice.

Mice, which were shown to be excellent experimental animals for this study, could be immunized with equal effectiveness by the subcutaneous and intraperitoneal routes, and a 14-day interval between vaccination and challenge was apparently sufficient to demonstrate the full immunity re-

sponse. Methods for the preparation and evaluation of effective type C *botulinum* toxoids are described.—[G. S. Appleton and P. G. White: *Clostridium Botulinum Type C. I. Studies on Laboratory Variables Affecting Toxin Production and Toxoid Evaluation*. *Am. J. Vet. Res.*, 18, (Oct., 1957): 942-946.]

New Journal, Arthritis and Rheumatism, to Be Published

The American Rheumatism Association announces the publication, bimonthly, of an official journal—*Arthritis and Rheumatism*. It will cover the field of connective tissue disorders, particularly rheumatoid arthritis, osteoarthritis, rheumatic fever, gout, the so-called "collagen diseases," and nonarticular rheumatism. The first issue will be January-February, 1958. Dr. William S. Clark has been named editor.

BOOKS AND REPORTS

Zoo Doctor

This description of the busy daily life of the veterinarian at New York's Bronx Zoo is directed toward the younger reader, who should enjoy learning about animals and the varied problems they present to a veterinarian. The book details some of these problems, such as, the raising of a baby potto, persuading an elephant to take medicine, and making friends with monkeys in order to examine them. It contains a number of good photographs which will interest "children" of all ages.—[*Zoo Doctor*. By William Bridges. 126 pages. William Morrow and Co., Inc., 425 Fourth Ave., New York, N.Y. 1957. Price \$2.95.]

Preliminary List of Diseases of Animals—International Veterinary Congress

This book is an outgrowth of the work of members of the List of Diseases Committee of the International Veterinary Congress comprising members from 13 countries: Australia, Austria, Canada, Denmark, France, Israel, Netherlands, New Zealand, South Africa, Spain, Sweden, Turkey, and the United States. Dr. Carl Olson, Jr., was the U.S. representative, he having headed the AVMA Special Committee on Nomenclature of Diseases which prepared a monograph, "A Basis for Nomenclature of Animal Diseases, Topographical Classifications, and Etiologic Categories," brought out in November, 1955, and revised in August, 1956.

The "Preliminary List," as published by the I.V.C., has been furnished to its committee members for study and recommendations, within the next six months, for future action; the present material is serving as a basis for study and, it is hoped, for progress. The list is not available for general distribution.—[*Preliminary List of Diseases of Animals*. 335 pages. Published by the International Veterinary Congress, Biltstraat 168, Utrecht, Holland, 1957.]

THE NEWS

Preparations Begun for Eradication of Screwworm in Southeast

Plans are being drawn and preliminary work is under way for a program to eradicate the screwworm, a serious pest of livestock and wildlife in the southeastern United States, the U.S. Department of Agriculture and the Florida Livestock Board, announced jointly, Oct. 9, 1957.

Screwworm infestation of livestock in the Southeast causes an estimated annual damage of \$10 to \$20 million in animals killed, deformed, and made susceptible to other diseases; in lowered production; and in costs of extra labor and medication. The screwworm is the maggot of the fly, *Callitroga hominivorax*, which lays its eggs on and around open wounds in warm-blooded animals.

The Florida legislature has voted an appropriation of \$3 million for two years of this work, and the Congress has voted \$1.6 million for the first year.

Eradication activities will take place almost entirely in peninsular Florida; however, the program is visualized as extending 100 miles north of the average overwintering line, to include most of the northern Florida peninsula and the southeastern corner of Georgia. If the winter is mild, it may be necessary to extend operations farther north.

The eradication program is based upon a simple fact in the life cycle of the screwworm fly—the females mate only once. Scientists reasoned that if native females were mated with males sterilized by atomic radiation, they could not reproduce. If a preponderance of sterile males could be maintained long enough, the fly would be exterminated. Pilot operations in Florida since 1950, and on the Caribbean island of Curacao in 1954, proved this theory to be true.

By the summer of 1958, it is planned to release sterilized laboratory-reared male flies at the rate of 25 million a week on the primary eradication area. The flies will carry no radioactivity and are not household pests.

Livestock owners will be requested to keep records of the number of screwworm infestations occurring in their herds each week. Some will be asked to collect larvae and eggs from infested wounds. This information, and that gathered by the ground crews, will be used to determine the number of sterile flies to be released over a given area and to estimate the length of time such releases may be required.

During and after eradication, inspection stations will be established along the Mississippi

River and at other points to examine east-bound animals enroute from infected areas in the Southwest. Eradication in the Southwest area is not considered feasible because of reinvasions from Mexico.

Sixth International Congresses on Tropical Medicine and Malaria to Be Held in Portugal in 1958

Preliminary announcement and membership applications for the Sixth International Congresses of Tropical Medicine and Malaria, to be held in Lisbon, Sept. 5 to 13, 1958, have been received.

The congresses will have several sections of interest to veterinarians, including a subsection on zoonoses. Other sections include the subjects of helminthic injections, protozoal injections, bacterial and mycotic injections, virus and rickettsial injections, tropical physiology, tropical hygiene, sanitation, and malaria.

Several categories of membership are provided for, depending on the individual's affiliations and interests. In the veterinary medical field, the agenda and programs of the congresses will be of special interest to those in public health work.

Membership application forms, which must be submitted before April 30, 1958, are available to JOURNAL readers in the U. S. upon request to the AVMA office, 600 S. Michigan Ave., Chicago 5, Ill.

Others should address their inquiries to the secretary-general of the congresses, Professor Manuel Pinto, Institute of Tropical Medicine, Lisbon, Portugal.

Training in Epidemiology

A multidiscipline course in principles of epidemiology will be offered at the Communicable Disease Center, Public Health Service, Atlanta, Ga., on Jan. 13-17, 1958, as a part of the continuing program of the Center's training branch.

Designed to provide public health workers with a basic understanding of how epidemiological techniques can be used in an approach to the solution of problems in the preventable disease field, the course is offered for the following categories of public health personnel: physicians, dentists, veterinarians, nurses, laboratory workers, environmental health personnel, and other members of the public health team. Participants will be selected on the basis of professional education and experience, and current responsibility in public health programs at all levels of government. Preference will be given to persons whose professional tasks involve the application of epidemiological procedures. Registrants will be expected to attend all sessions of the course.

Further information and application forms may be obtained from: Chief, Communicable Disease Center, Public Health Service, 50 Seventh St., N. E., Atlanta 23, Ga., Attention: Chief, Training Branch.

Veterinary Faculty Changes

The following changes in veterinary personnel in the faculties at the Schools of Veterinary Medicine were reported at the beginning of the 1957-1958 school term:

Alabama.—The veterinarians listed below have been added to the staff of the School of Veterinary Medicine, Alabama Polytechnic Institute: Charles W. James (API '54), instructor, Department of Anatomy and Histology; Richard P. Crawford (TEX '57), instructor, Department of Bacteriology; J. Russell Lindsey (GA '57), Department of Pathology and Parasitology.

California.—Additions to the staff of the School of Veterinary Medicine at the University of California include: Howard Evans (Ph.D., COR '50), on sabbatical leave from Cornell; Ottar Dybing (NVC '41), on leave from Copenhagen Veterinary College; M. C. Burns (WSC '57) and R. E. Mason (CAL '57), assistant specialists, Department of Medicine and Surgery; D. J. Vincent (CAL '57) and D. A. McMartin (EDN '57), assistant specialist, avian medicine; J. J. Kaneko (CAL '56), lecturer and assistant specialist, clinical pathology; Richard Yamamoto (Ph.D., CAL '57), public health; Otto Straub (HAN '56), medicine and surgery; and D. S. Kronfeld (Univ. of Queensland '56), assistant specialist in physiology.

The following resignations were reported: Hiram Kitchen (CAL '56) and C. T. Robinson (CAL '56), to enter private practice; Andre Boidin (ALF '53), to accept a position with Pfizer Laboratories; and C. D. Meredith (PRE '52), private employment.

Colorado.—The following veterinarians have joined the faculty of the College of Veterinary Medicine, Colorado State University: Robert Rubin (COL '49), associate professor, pathology and bacteriology; James T. Ingram (COL '52), assistant professor, veterinary medicine; Hermann Meyer (ZUR '50), assistant professor, veterinary anatomy; E. J. Carroll (COL '57), instructor, Department of Surgery and Clinics; Joseph Molello (COL '43), instructor, veterinary anatomy; John S. Orsborn (COL '44), instructor, pathology and bacteriology; Glenn A. Severin (COL '53), instructor, veterinary medicine; Jack G. Stevens (WSC '57), instructor, pathology and bacteriology; Donald H. Will (COL '55), instructor, veterinary physiology; John E. Oliver, Jr. (TEX '57), temporary instructor, veterinary medicine; and Judson E. Todd (COL '57), temporary instructor surgery and clinics.

The following have resigned: Robert D. Angus, Marion A. Hammarlund, Jack E. Roberts, Jack Sohrbeck, Melvin Swenson, Robert W. Thomassen, and Bertram O. Woodworth.

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Cornell.—The new members of the faculty of the New York State College of Veterinary Medicine, Cornell University, are: Cyril Comar (Ph.D., Purdue '41), professor of radiation biology and director of the Laboratory of Radiation Biology, a unit of the Department of Veterinary Physiology; Joseph H. Gans (Ph.D., Jefferson Med. School '57), professor of veterinary pharmacology (V.M.D., UP '41); Carel van de Watering (UT '54), acting assistant professor of veterinary anatomy; John Annis (COL '50), resident veterinarian in the Department of Therapeutics and Small Animal Diseases; Joan C. Burgher (B.S., COR '55), research associate in the Department of Pathology and Bacteriology; Robert Wasserman (Ph.D., COR '53), research associate in radiation biology; Daniel B. Davis, Jr. (COR '57), medical interne in the Department of Therapeutics and Small Animal Diseases; Henry F. Doerge (COR '57), medical interne in the Department of Therapeutics and Small Animal Diseases; Thomas A. Gorman (COR '57), medical interne in the Department of Surgery; Robert A. Moore (COR '57), medical interne in the Department of Medicine; John B. Tasker, Jr. (COR '57), medical interne in the Department of Medicine; Arthur Aronson (MIN '57), assistant in veterinary pharmacology; John M. Bowen (ALA '57), assistant in physiology; Richard Chalquest (WSC '57), assistant in poultry diseases; Alan N. Taylor (B.S., OSU '57), assistant in Parasitology.

The following veterinarians have resigned: Eugene Adams (KSC '44), to return to Tuskegee as head of the Department of Pathology and Parasitology; Jonathan Adler (UP '54), to return to his home in Israel; Herbert L. Bandemer (COR '55), to enter practice; Mendell P. Bartlett (COR '56), to enter practice; Bernard F. Brennan (OVC '51), to enter practice; Bruce W. Calnek (COR '55), to University of Massachusetts; John Howe (COR '56), to enter practice; David E. Hughes (COR '51), to join the Agricultural Research Service, U.S.D.A.; Holgar Madsen (COP '52), to return to Denmark; Robert J. Manning, (COR '56), to enter practice; Hermann Meyer (ZUR '52), to Colorado State University; Emil Perona (COR '56), to enter practice; R. F. Reichard (UP '54), to enter practice.

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Georgia.—New faculty members at the School of Veterinary Medicine, University of Georgia, are: Donald E. Weinman (KSC '46), instructor of anatomy and histology; William E. Greer (GA '57), research associate; and Emmett Shotts (B.S., API '52), research assistant.

Illinois.—The following veterinarians have been appointed to the staff of the College of Veterinary Medicine, University of Illinois, to the Department of Veterinary Pathology and Hygiene: Alvin B. Hoerlein (COL '40), professor; Robert B. B. Thomas (EDN '55, ONT '57), instructor; Thomas E. Fritz (MSU '55), instructor; Walter Myers (ILL '57), instructor; Merlir L. Kaerberle (COL '54), instructor, veterinary clinical medicine; Ernest V. Stromlund (ISC '40), instructor, veterinary anatomy and histology; O. P. Malhotra (Punjab Vet. College, '49), assistant in veterinary physiology and pharmacology.

The following resignations were reported: Drs. R. E. Bradley, Richard J. Brown, Norman D. Jones, and D. J. Sullivan.

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Iowa.—The following appointments have been made to the Division of Veterinary Medicine, Iowa State College: James M. Brown (ISC '51), assistant professor, medicine and surgery; Phillip T. Pearson (ISC '56), instructor, medicine and surgery; Harry W. Yoder (ISC '56), assistant professor, veterinary medical research institute; Carlos H. Contag (ISC '56), instructor, veterinary hygiene; Frank E. Mitchell (GA '55), instructor, veterinary diagnostic laboratory; and Allan L. Trapp (MSU '56), research associate, veterinary pathology.

Those who resigned during the past year are: Dean F. Johnson (MIN '55), military service; James M. Brewer (UP '55), private practice; Hugh D. Simpson (ONT '50), to join the American Cyanamid Co.; L. C. Payne (KSC '41), to join staff of University of Nebraska; Wayne E. Smith (COL '56), private practice; Milton E. Taylor (MO '51), private practice; and A. H. Groth, Jr. (API '54), to join staff at Alabama Polytechnic Institute.

Dr. Ramsey Heads Department of Pathology.—Dr. Frank K. Ramsey (ISC '46) has been named professor and head of the Department of Veterinary Pathology at Iowa State College. He succeeds Dr. E. A. Benbrook who relinquished administrative duties July 1, because of the age limitation rule.

A Missourian by birth, Dr. Ramsey received an M.A. degree from the University of Montana in 1940 and a Ph.D. degree from Iowa State in 1955. Joining the I.S.C. staff as a student assistant in 1943, he was appointed assistant professor of veterinary anatomy in 1946. He became associate professor of pathology in 1949, a position he held until he was named head of the department this year. Besides teaching special pathology and post-mortem pathology, Dr. Ramsey's research interest is mucosal disease, on which his Ph.D. thesis is based. He continues his studies of this disease under a grant from the Agricultural Research Service. In June, 1957, he was named the Clarence



Dr. Frank K. Ramsey

Covault Distinguished Professor of Veterinary Medicine.

Dr. and Mrs. Ramsey have four children.

Dr. Swenson Heads Department of Physiology and Pharmacology.—Dr. Melvin J. Swenson (KSC '43) has been appointed professor and head of the Department of Veterinary



Dr. Melvin J. Swenson

Physiology and Pharmacology at Iowa State College.

In addition to the D.V.M. degree, Dr. Swenson also holds the M.S. (ISC '47) and Ph.D. (ISC '50) degrees. His thesis was based on the nutritional effects of vitamin B₁₂. He continues his interest in fundamental physiology.

Dr. Swenson taught at Louisiana State University in 1943. He then served three years with

the U. S. Army before returning to Iowa State College in 1946 to study under a grant from the AVMA Research Fund. He became an assistant professor in 1949, joining the Kansas State College staff in 1950, and the Colorado State University staff in 1956. He succeeds Dr. Earl Hewitt who relinquished administrative duties because of the age limitation rule.

Dr. and Mrs. Swenson have a son and two daughters.

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Kansas.—The following have been appointed to the staff of the School of Veterinary Medicine, Kansas State College: Donald M. Trotter (KSC '46), professor and head, Department of Anatomy; Kenneth W. Huffman (OKL '53), instructor, Department of Anatomy; Dallas M. Nelson (KSC '53), research, Department of Pathology; Maurice C. Morrisette (KSC '54), teaching and research, Department of Physiology; Robert F. Borgman (MSU '47), teaching and research, Department of Physiology; Robert B. Barrett (COR '56), instructor, Department of Surgery and Medicine.

Dr. J. W. Lumb (KSC '10), retired, July 1, 1957, as professor emeritus.

Dr. Trotter Heads Department of Anatomy.—

Dr. Donald M. Trotter (KSC '46), a native of Minnesota, was appointed professor and head of the Department of Anatomy, Kansas State College, on Aug. 3, 1957.



Dr. Donald M. Trotter

After receiving his D.V.M. degree, Dr. Trotter served as an instructor of veterinary anatomy on the faculty of Iowa State College. Following the organization of the School of Veterinary Medicine at the University of Missouri, he became assistant professor in the Department of Pathology at that

School. He was then employed by the newly organized School of Veterinary Medicine at Oklahoma State University as professor of pathology and served there as department head until 1954, at which time he became director of pathology research for a commercial company.

Dr. Trotter joined the staff of the Department of Anatomy at K.S.C. on Feb. 1, 1956. He is the author of several scientific and technical articles; he holds membership in the AVMA, Kansas V.M.A., American Association of Veterinary Anatomists, and several professional fraternities.

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Michigan.—The new additions to the staff of the College of Veterinary Medicine, Michigan State University, are: James V. Hruska (MSU '57), (research) instructor in veterinary pathology; James R. Ray (OSU '57), instructor in microbiology and public health; Glenn N. Taylor (COL '56) and Robert J. Van Ryzin (ISC '55), instructors in veterinary pathology.

Dr. Brinker Heads Department of Surgery.—

Dr. Wade O. Brinker (KSC '39) was appointed head of the Department of Surgery and Medicine, College of Veterinary Medicine, at Michigan State University on July 1, 1957.



Dr. Wade O. Brinker

With the exception of five years in the Veterinary Corps, U. S. Army (1941-1946), Dr. Brinker has been an M.S.U. staff member since he joined the faculty as a graduate assistant in 1939. After service in World War II, he returned to M.S.U. and was named associate professor of surgery and medicine in August, 1948, and professor in July, 1950.

Dr. Brinker was named "veterinarian of the

year" by the Gaines Dog Research Foundation in 1954. He is a frequent contributor to veterinary publications, and holds membership in the AVMA and in several scientific and honorary societies. In 1954, he served as president of the Michigan State V.M.A.

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Minnesota.—The following veterinarians have been appointed to the faculty of the College of Veterinary Medicine, University of Minnesota: John M. Higbee (ISC '39), assistant professor, Division of Veterinary Diagnostic Laboratories; Roger A. Ball (ISC '54), research fellow, Division of Veterinary Pathology and Parasitology; Robert H. Dunlop (ONT '56) and Harold E. Dziuk (MIN '54), instructors, Division of Veterinary Physiology and Pharmacology; Ira M. G. Gourley (WSC '55), instructor, Division of Veterinary Surgery and Radiology; Stanley E. Held (ISC '57), instructor, Division of Veterinary Medicine and Clinics; Niels O. Nielsen (ONT '56), instructor, Division of Veterinary Pathology and Parasitology; Richard F. Palmer (MIN '53), part-time instructor, Division of Veterinary Anatomy; Bennett J. Porter (ISC '31), part-time instructor, Division of Veterinary Anatomy; and John C. Schlotthauer (MIN '54), instructor, Division of Veterinary Diagnostic Laboratories.

The following have resigned: Martin H. Roepke, to accept a position with the Animal Disease and Parasite Research Division of the Agricultural Research Service; John J. Clark, to accept a position with the Upjohn Co.; Donald C. Innes, general practice; Francis D. Knippling, to accept a position with the Chas. Pfizer and Co.; Frank Sauer, to accept a research position with the Canadian Government; and Joseph W. Walker, to accept a position on the Board of Health in Ardmore, Pa.

Dr. Ralph L. Kitchell, head of the Division of Veterinary Anatomy, is on a sabbatical leave until Sept. 15, 1958, to carry on research in Sweden; Dr. Alvin F. Sellers, head of the Division of Veterinary Physiology and Pharmacology, is on sabbatical leave until Aug. 31, 1958, to study on a Guggenheim Fellowship in England and Scotland. Dr. Dale K. Sorensen, associate professor in the Division of Veterinary Medicine and Clinics, is on leave until June 30, 1958, to carry out special work at the Brookhaven National Laboratories of the Associated Universities at Upton, N.Y., in the use of radioactive isotopes and radiobiology.

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Missouri.—The new appointments to the faculty of the School of Veterinary Medicine, University of Missouri, are: Matthew H. Wykorr (ISC '46), assistant professor of veterinary anatomy; and Donald C. Blendon (MO '56), instructor, veterinary bacteriology and parasitology.

Dr. A. J. Durant (MSC '25), a member of

the faculty since 1915, when he was appointed research assistant, has reached retirement age and is now professor emeritus of veterinary bacteriology.

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Ohio.—The new members of the faculty of the College of Veterinary Medicine, Ohio State University, are: Richard L. Rudy (OSU '43), head, Department of Veterinary Surgery; Albert A. Gabel (OSU '54), instructor, Department of Veterinary Surgery; and Eugene Papp (BUD '43), instructor, Department of Veterinary Anatomy.

Dr. Rudy Heads Department of Surgery.—Dr. Richard L. Rudy (OSU '43), who has been on the staff of Ohio State University since January, 1944, was appointed professor and chair-



Dr. Richard L. Rudy

man of the Department of Veterinary Surgery in July, 1957.

In addition to his teaching activities, Dr. Rudy also participates actively in national and state veterinary medical association activities and professional programs throughout the United States. He is a member of several honorary societies and is a charter member of the American Veterinary Radiology Society.

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Oklahoma.—The new veterinarians on the staff of the College of Veterinary Medicine, Oklahoma State University, are: James R. Corcoran (COL '34), associate professor of veterinary pathology; Herbert W. Reuber (ONT '57), associate professor of veterinary physiology and pharmacology; Dennis D. Goetsch (KSC '52), assistant professor of veterinary physiology and pharmacology; William E. Brock (KSC '44) has returned from his sabbatical leave.

Those who left the staff during the year are:

M. C. Morrisette (KSC '54), now at Kansas State College; E. E. Staley (OKL '54), presently in general practice; and J. G. Wadsworth (KSC '50), now in poultry inspection for the U.S.D.A.

Ontario.—The new members of the staff of the Ontario Veterinary College, University of Toronto, are: D. C. Blood (SYD '42), associate professor, Department of Medicine and Surgery; K. V. Jubb (SYD '51), associate professor, Department of Pathology and Bacteriology; M. C. Connell (ONT '50), assistant professor, Department of Pathology and Bacteriology; C. M. Frasier (ONT '54), assistant professor, Department of Medicine and Surgery; L. M. Cobb (Bristol '56), lecturer, Department of Medicine and Surgery; T. J. Pridham (ONT '55), lecturer, Department of Pathology and Bacteriology; T. J. L. Alexander (LON '55), graduate assistant, Department of Medicine and Surgery; B. Sorrell (ONT '57), graduate assistant, Department of Medicine and Surgery; and Vicki Zavitz (ONT '56), graduate assistant, Department of Anatomy.

The following resignations are reported: Joan Belcher, D. H. G. Irwin, W. G. Drennan, G. Sapegin, D. L. Dungworth, Judith C. Ochalski, J. H. Reed, and G. D. Wetherill.

Dr. Downie Heads Department of Research.—Dr. H. G. Downie (ONT '48) was appointed professor head of the Department of Research, Ontario Veterinary College, when it was established on April 1, 1957.



Dr. H. G. Downie

Dr. Downie received the M.S. degree from Cornell University in 1951 and the M.V.Sc. degree from the University of Toronto in 1952. He was a National Research Council of Canada

special scholarship student for the year 1953-1954 and spent a period of residence in the Department of Physiology at the University of Western Ontario Medical School. He held the position of associate professor in the Department of Physiology at the Ontario Veterinary College at the time of his transfer to his new position.

Dr. Downie has written several papers on experimental physiology, including organ transplantation and hemorrhagic shock. He was a collaborator with Dr. J. Markowitz in the third edition of "Experimental Surgery."

Pennsylvania.—The following are recent staff additions to the School of Veterinary Medicine, University of Pennsylvania: H. Lincoln Easterbrooks (OSU '48), associate professor of veterinary medicine; Frank L. Krohn (COR '55), instructor, veterinary medicine; Morris Barenfus (UP '57), instructor, veterinary microbiology; Lincoln J. Parkes (COL '57), instructor in veterinary medicine; Allen C. Sayers (UP '57) and Richard L. Stride (ISC '57), instructors, veterinary surgery.

Quebec

Dr. Jacques Named Assistant to Dean.—Dr. Ephrem Jacques (MON '42) was born in Southbridge, Mass., and received his early



Dr. Ephrem Jacques

education at L'Assomption College in Quebec. After receiving his D.V.M. degree in 1942, he engaged in general practice, first in Sherbrooke and then in Richmond, Que. He is a member of several social and professional groups.

In 1956, Dr. Jacques was appointed part-time professor in veterinary ethics at the School of Veterinary Medicine at Saint-Hya-

cinthe and, in September, 1957, was nominated full-time professor and assistant to the dean. Dr. and Mrs. Jacques have four children.

Dr. Garon Appointed Professor of Anatomy Department.—Dr. Olivier Garon (MON '55) was born at St. Denis, Que., and prior to receiving his D.V.M. degree, attended Quebec College. During his studies at the School of Veterinary Medicine at Saint-Hyacinthe, he received many awards and was twice the recipient of prizes offered by the Provincial Veterinary Research Laboratory.

In 1955, Dr. Garon joined the Health of Animals Division of the Provincial Department of Agriculture, Quebec, where he specialized in sterility work. He published a paper on the anatomy of high vertebrates and another on the means of defense of the body and has made a special study on the diseases of the Canadian elk.

In September, 1957, Dr. Garon was appointed professor of anatomy under the direction of Dr. Joseph Dufresne, head of the department.

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Texas.—At the School of Veterinary Medicine, A. & M. College of Texas, the following faculty members have been recently appointed: Alvin A. Price (TEX '49), dean; Fred P. Jaggi, Jr. (TEX '26), professor and head, Department of Veterinary Public Health; Carl W. Schulz (KSC '34), professor and head, Department of Veterinary Medicine and Surgery; Kenneth R. Pierce (TEX '57), instructor, Department of Veterinary Anatomy.

Dr. Schulz Heads Department of Medicine and Surgery.—Dr. Carl W. Schulz (KSC '34) has been appointed professor and head of the Department of Veterinary Medicine and Surgery at the School of Veterinary Medicine, A. & M. College of Texas.

From 1934 to 1942, Dr. Schulz engaged in general practice. He served in the Veterinary Corps, U. S. Army, from 1942 until 1946 and then returned to his practice until 1956, when he accepted a position as professor in charge of clinics at Texas A. & M. He is a member of the AVMA, the Central Missouri V.M.A., the Missouri State V.M.A., and of several professional fraternities.

Dr. Jaggi Heads Department of Public Health.—Dr. F. P. Jaggi (TEX '26), formerly professor of veterinary microbiology and assistant to the dean in the School of Veterinary Medicine at the A. & M. College of Texas, has been appointed head of the new Department of Veterinary Public Health.

For several years, Dr. Jaggi engaged in private practice and also served as city veterinarian in charge of milk and meat inspection at Beaumont, Texas. In 1937, he was appointed to the staff of



Dr. F. P. Jaggi

the Department of Veterinary Hygiene, School of Veterinary Medicine, A. & M. College of Texas, where he has taught preventive medicine and public health for the past 20 years.

Because of the increased demands for veterinarians in public health work by municipal, state, and federal governments, the new Department of Veterinary Public Health was approved Aug. 12, 1957. Dr. Jaggi will continue his teaching within the department and plans to initiate some research and graduate instruction.

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Tuskegee.—New members of the faculty at the School of Veterinary Medicine, Tuskegee Institute, are: Eleanor L. Ison (Ph.D., WIS '57), assistant professor, Department of Physiology and Pharmacology; and Steve Goldsberry (M.S., MSU '55), Department of Anatomy.

Drs. Raleigh H. Allen, Rodney R. Gross, and Louis Singleton have resigned.

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Washington.—The only faculty change at the College of Veterinary Medicine, State College of Washington, was the appointment of Deiter Burger (MUN '54), as acting junior veterinarian to study feline panleukopenia and virus enteritis of mink at the Fur Animal Disease Station. Dr. Burger is being supported on research grant funds from the Mink Farmers' Research Foundation and will work with Dr. John Gorham.

AMONG THE STATES AND PROVINCES

California

Southern California Association.—The California V.M.A. council held its regular meeting at the Mayfair Hotel in Los Angeles, Oct. 30, 1957.

Mr. Paul Capland, state health department, reported to the council on the x-ray survey which began November 1. At the end of the survey, a report of the complete findings will be given, and each hospital participating in the investigation will receive a report on its individual findings.

Dr. Ben Dean reported on the regulations which the state health department is considering to enforce the recently adopted state rabies law.

Mrs. Ralph C. Vierheller presented a report of the auxiliary's recent activities and a check for \$500 in full payment of the loan made to the auxiliary by the S.C.V.M.A.

The officers elected for the coming year are: Drs. Howard C. Taylor, Los Angeles, president; Burton F. Pike, Long Beach, first vice-president; Robert J. Schroeder, Downey, second vice-president; and Wesley A. Young, Hollywood, treasurer.

Southern California V.M.A. Exhibit at Los Angeles Fair a Success.—An estimated 200,000 people visited the association's exhibit at the Los Angeles County Fair from Sept. 13-29, 1957.

For many of these people, it was their first contact with the veterinary profession. The attendants at the booth, asked to record the reactions and comments of the viewers, reported that they most frequently referred to the years of education needed to become a veterinarian and the cleanliness of the exhibit, which seemed to impress them even more than the modern equipment.

The association feels that this exhibit served as an education medium to help the general public learn more about the profession of veterinary medicine.

District of Columbia

District Association.—The third annual all-day meeting of the District of Columbia V.M.A. was held Oct. 1, 1957, in the Sternberg Auditorium of the Walter Reed Army Medical Center. A total of 140 veterinarians and guests registered for the scientific sessions.

Guest speakers and their presentations were: Drs. Winchester, ARS—Do Aircraft Sounds Affect Swine (movie); L. Fisher, Berwyn, Ill.—Zoo Animals and the General Practitioner; R. Johnston, Pitman-Moore Company, Indianapolis, Ind.—New Developments in Canine Immunization; and J. A. Kerr, Rockefeller Institute for Medical Research—Jungle Yellow Fever and Related Viruses.

The following members presented papers: Drs. H. Johnson, ARS—Animal Disease and Parasite Research and the Ames Laboratory Plans; Lt. Col. B. Trum, Atomic Energy Commission—Peaceful Uses of Atomic Energy; F. Abinanti, National Institutes of Health—The

Role of Tissue Culture in Investigation and Prevention of Disease.

In the afternoon there was a two-hour closed-circuit color television presentation. The participants and their subjects were: Drs. R. Lynn, Riverdale, Md.—Handling of Poisonous Snakes and Treatment of Their Bites; W. Gay, National Institutes of Health—Surgical Lengthening of the Femur of the Dog by Prosthesis; L. Fisher and T. Reed, National Zoological Park—Management of Exotic Animal Patients; J. Curry, Washington, D. C. and E. Ruebush, Silver Spring, Md.—Clinical X-Ray Interpretation; and R. Kinard and C. McPherson, National Institutes of Health—Trichlorethylene and Fluothane as Anesthetic Agents.

s/WILLIAM I. GAY, Secretary-treasurer.

Dr. E. N. Tierney Retires.—Dr. Edward N. Tierney, chief of the special projects section, meat inspection division, U.S.D.A., retired Oct. 31, 1957, after completing over 46 years of outstanding service in federal meat inspection.



Dr. Edward N. Tierney

Dr. Tierney graduated in veterinary medicine from the Chicago Veterinary College in 1911. In 1913, he assisted in stamping out foot-and-mouth disease and, at the outbreak of World War I, he was detailed to Army Quartermaster Corps.

Since August, 1935, Dr. Tierney has been in the Washington headquarters of the meat inspection division. He had worked in every section of that office until 1941, when he was appointed chief of the special projects section, the position he held until his retirement.

In May, 1957, Dr. Tierney received one of the department's highest honors when he was given a superior service award "for skill in public administration and international and intergovernmental relations in handling an es-

sential part of the department's complex problems involving exportation and importation of meat and meat food products."

Dr. Tierney has continued to live in Washington since his retirement.

Florida

State Association.—The twenty-eighth annual meeting of the Florida State V. M. A. was held at the Fort Harrison Hotel, Clearwater, Fla., on Oct. 13–15, 1957. Dr. A. E. Whaley, Kissimmee, Fla., presided over the meeting of more than 347 veterinarians and guests.

Some of the speakers who appeared at the Florida State V.M.A. meeting in October.



Front row, left to right—Drs. Frank Kral, University of Pennsylvania, Donald R. Mackey, Greeley, Colo., Kenneth B. Haas, University of Chicago.

Back row, left to right—Henry M. Parrish, University of Pittsburgh, W. R. Pritchard, University of Florida, Lincoln Easterbrooks, University of Pennsylvania.

Clinical demonstrations were held at the Largo fair grounds and in the ballroom of the hotel. National authorities on various diseases put on demonstrations and gave scientific papers on the latest developments in veterinary medicine. Dr. H. J. Hill, Colorado State College, presented a demonstration and a paper on the examination of bulls for fertility and the use of hormones in various types of infertility in cows.

Dr. Clarence Campbell, secretary, Florida Livestock Board, and state veterinarian, talked on tick eradication and screwworm programs. Dr. Paul Little, Florida Livestock Board, discussed progress in brucellosis eradication. Dr. W. R. Pritchard, head, veterinary science department, Gainesville, spoke on mucosal diseases any mycotic stomatitis of cattle. An interesting demonstration and discussion on the treatment of snake bites in animals was demonstrated by Henry Parrish, M.D., University of Pittsburgh. He was assisted by Mr. Prince,

Miami, who demonstrated the handling of live specimens of the poisonous snakes found in Florida.

An outstanding feature of the program was two lectures and a demonstration by Dr. Frank Kral, University of Pennsylvania, on skin diseases of animals. Dr. T. J. Cunha, University of Florida, animal husbandry department, presented recent advances in beef cattle and swine nutrition.

Another speaker, Dr. Donald Mackey, Greeley, Colo., a practicing veterinarian, gave an illustrated lecture on diseases of feedlot cattle. The scientific program concluded with a paper by Dr. H. L. Easterbrooks, Kenneth Square, Pa., on the use of enzymes in the treatment of wounds and infections.

The following officers were elected for the coming year: Drs. Charles Ben Plummer, Fort Myers, president; Robert P. Knowles, Miami, president-elect; Arthur R. Chambers, Jacksonville, secretary; and Ralph W. Porter, Quincy, treasurer.

Illinois

Illinois Nutrition Conference for Veterinarians.—The Illinois State V.M.A. sponsored a nutrition conference for veterinarians, which was held in the Pabst Brewing Company auditorium, Peoria Heights, Ill., Nov. 6, 1957. Dr. Morris Erdheim presided.

The nutrition committee of the Illinois State V.M.A. worked with a committee from the Illinois Feed Association in drafting a successful program.

Among the speakers and the subjects on the program were: Dr. Stan W. Terrill, professor, University of Illinois—Hog Nutrition; Mr. Ralph McCall, manager, cattle feed research, Quaker Oats Co., Barrington, Ill.—Cattle Nutrition for Veterinarians; Dr. Karl E. Gardner, professor, University of Illinois—Feeding the Dairy Calf; Dr. C. A. Brandly, dean, College of Veterinary Medicine, University of Illinois—Economic Aspects and Education Obligations of Poultry Practice; Dr. John W. Bernotavicz, director, Gaines Research Kennels, Kankakee, Ill.—Nutritional Aspects of Small Animal Practice; Dr. E. I. Robertson, director of nutrition, John W. Eshelman & Sons, Lancaster, Pa.—Medicated Feeds—A Feed Man's Point of View.

The program concluded with a panel of two veterinarians and two feed specialists who discussed "Veterinarian—Feed Dealer Relationships."

S/PAUL T. GAMBREL

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Mississippi Valley Association.—The fifty-third annual convention of the Mississippi Valley V.M.A. was held at the Hotel Pere Marquette, Peoria, Ill., Oct. 23-24, 1957.

Among the speakers and their subjects on the program were: Drs. Glynden T. Easley, ranch veterinarian, Sulphur, Okla.—Beef Cattle Practice; C. L. McGinnia, practitioner, Peoria—Small Animals (illustrated); T. H. Brasmer, practitioner, Danville, Ill.—Canine Geriatrics (illustrated); A. C. Todd, Department of Veterinary Science, University of Wisconsin, Madison—Parasitology in 1957 Veterinary Practice (illustrated); and A. K. Merriam, superintendent, Division of Livestock Industry, Springfield—New Regulations and Review of Older Regulations.

S/WILLIAM L. BEER, *Secretary-treasurer.*

University of Illinois Annual Short Course for Veterinarians.—The thirty-eighth annual Illinois conference and extension short course for veterinarians was held Oct. 17-18, 1957, in the veterinary medicine building, University of Illinois, Champaign.

A selection of the subjects and speakers who participated in the conference were: Drs. G. D. Becker—New Concepts of Swine Nutrition; J. D. Ray—Present Status of Prophylactic Vaccination in Swine Erysipelas; B. D. Beamer—Diseases of Baby Pigs; R. E. Shope—Hog Cholera Virus Reservoirs and Eradication; J. W. Cunkelman—Feed Additives and Their Influence in Veterinary Medicine; H. J. Hardenbrook—Infertility in the Bull; M. Ristic—Vibriosis in Cattle; W. G. Magrane—Disease of the Orbit (illustrated); R. V. Johnson—Virus Diseases of the Cat, and W. H. Riser—Distemper, Systemic Fungi, Toxoplasmosis Syndrome.

Several demonstrations presented at the conference were broadcast over closed-circuit television.

S/L. E. BOLEY, *Chairman.*

Cook County Graduate School of Medicine Announces Special Courses in Veterinary Medicine.—By special arrangement with the Chicago V. M. A., the Cook County Graduate School of Medicine is holding two, part-time postgraduate courses in veterinary medicine during the winter, 1957-1958. The courses, to be presented for ten consecutive Wednesdays, began November 6, from 1:00 to 4:00 p.m.

A course in veterinary clinical pathology and laboratory medicine offered areas of study which include hematology, blood chemistry, urine analysis, physiology, serology, and liver function tests. Various laboratory findings are discussed and instruction is given in the technique of performing laboratory procedures which are routine in veterinary hospital practice.

Another course, radiology in veterinary medicine, is concerned with the practical aspects of the diagnostic x-ray. Theory and basic methods are discussed, including protection against

radiation hazards. Fractures, the skeletal system, chest, head, neck, abdomen, and soft tissue are also part of the course.

The part-time course in general surgery for veterinarians, which was offered last spring, will be repeated in the spring of 1958. The above courses may also be repeated in the spring, if there is sufficient demand for them.

Iowa

Eastern Iowa Association.—The forty-fourth annual meeting of the Eastern Iowa V.M.A. was held at the Hotel Sheraton-Montrose, Cedar Rapids, Iowa, Oct. 17-18, 1957.

Some of the speakers and their subjects included on the two-day program were: Drs. John B. Herrick, extension veterinarian, Iowa State College, Ames—New Concepts in Sterility Practice; Jesse Sampson, professor and head, Department of Veterinary Physiology and Pharmacology, University of Illinois, Urbana—Nutrition and Disease of Farm Animals; Edward E. Ballantyne, director, veterinary service branch, Edmonton, Can.—Rabies Control in Alberta Wildlife; C. D. Lee, extension veterinarian, Iowa State College, Ames—Poultry Diseases; and D. Wayne Rawson, practitioner, Milledgeville, Ill.—Nuisance Diseases of Swine.

The Women's Auxiliary to the association met in conjunction with the V.M.A. convention at the Hotel Sheraton-Montrose, October 17-18.

Kansas

Nutritional Deficiencies in Small Animals to be Studied with Radioisotopes.—The University of Kansas recently announced a grant of \$25,000 from the Mark L. Morris Animal Foundation to be used in research with radioactive substances on nutritional deficiencies in small animals. The project consists of a fellowship in radiation biophysics granted to Dr. Gilbert Fischer (Ill '56), who will study the modification of radioisotope tracer methods used in research on human deficiency diseases as applied to functions of certain organs and glands in animals in relation to their effect on obesity and longevity.

Minnesota

Dr. McNutt Addresses Groups at the University of Minnesota.—Dr. Samuel H. McNutt, professor of veterinary pathology, University of Wisconsin, spoke to members and guests of the Kappa Chapter of the Society of Phi Zeta, Oct. 28, 1957. The subject of his speech was "The Role of the Veterinarian in His Community."

Dr. McNutt addressed the faculty and upper classmen on the topic, "Studies of the Causes of Infertility in Clinically Normal Dairy Cattle."

Missouri

Southeast Missouri Association.—The annual fall meeting of the Southeast Missouri V.M.A. was held in Sikeston, Mo., on Sept. 18, 1957.

The speakers on the program were: Drs. Henry Craig, Pitman-Moore Company, Indianapolis, Ind.; K. H. Niemeyer, Columbia, Mo.; and L. A. Rosner, Jefferson City, Mo.

The afternoon portion of the program was devoted to large and small animal clinics.

S/PAUL L. SPENCER, *Secretary*.

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University of Missouri Annual Short Course for Graduate Veterinarians.—The thirty-third annual short course for graduate veterinarians was conducted under the direction of the University of Missouri's School of Veterinary Medicine in cooperation with the Missouri V.M.A., at Columbia, Mo., Oct. 14-15, 1957. Registration totaled 180.

Twelve clinical demonstrations were presented on television, with Dr. E. F. Ebert in charge. Dean A. H. Groth presided over the remainder of the first day of the program. Drs. George C. Shelton and Joseph T. McGinity conducted the second day's proceedings.

Among the veterinarians participating and their subjects were: Drs. W. J. Kilpatrick, practitioner, Mediapolis, Iowa—Antibiotic Sensitivity Tests and Laboratory Diagnosis by the Practitioner; L. M. Hutchings, dean, School of Veterinary Science and Medicine, Purdue University, Lafayette, Ind.—Swine Disease Problems; R. W. Boone, veterinarian in charge, ARS, Jefferson City, Mo.—The National Picture on Brucellosis; E. R. Price, public health veterinarian, Jefferson City, Mo.—Ornithosis and Psittacosis; and A. H. Frank, bacterial and mycotic disease section, Beltsville, Md.—Bovine Trichomoniasis.

The high egg passage (HEP) rabies vaccine was administered to 84 veterinarians and to 110 students in the School of Veterinary Medicine during this short course. The blood from groups of students will be checked at intervals for the presence of antibodies. This vaccine was made available through Drs. E. R. Price, Missouri division of health, and J. M. Rueggseger, Lederle medical research department.

New York

Death of Dr. Atwater, A.P.H.A. Secretary.—Reginald M. Atwater, M.D., executive secretary of the American Public Health Association for the past 22 years and known to thousands of public health workers in the fields allied to medicine, died on Oct. 18, 1957, at the age of 65.

He was specially trained in public health, receiving his M.P.H. and his D.P.H. degrees at Johns Hopkins University. He devoted most of his professional life to that work. Dr. At-

water was the recipient of numerous honors during his lifetime and served in a consulting capacity to several agencies and organizations.

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Women's Auxiliary.—The annual meeting of the Women's Auxiliary to the New York State Veterinary Medical Society was held Sept. 11, 1957, at the Park Lane Restaurant, Buffalo, with the president, Mrs. Howard K. Fuller, Interlaken, presiding.

A vote was taken in support of contributions to the Memorial Fund of the Auxiliary to the AVMA, the AVMA Research Fund, and to the expenses of the student-wife representative to the AVMA Auxiliary.

Among the new projects adopted was the placing of a photomural of the Cornell University campus, showing James Law Hall, in the new building of the New York State Veterinary College, as a gift from the auxiliary.

The report of the delegate to the house of representatives of the AVMA Auxiliary was given by Mrs. Orland E. Helms, East Randolph. Mrs. J. J. Fishler, Elkhart, Ind., chairman of the public relations media committee of the AVMA Auxiliary, was the guest speaker. Other honored guests were Mrs. R. E. Rebrassier, Columbus, Ohio; Mrs. Wayne H. Riser, Skokie, Ill.; and Mrs. Wright and Mrs. Hutchinson, Ottawa, Can.

The officers elected for the coming year are: Mrs. Harry G. Hodges, Ithaca, president; Mrs. George T. Dorney, Pleasant Valley, president-elect; Mrs. T. J. Love, Watkins Glen, secretary; Mrs. John C. Sweetman, Roxbury, treasurer; and Mrs. Merrill Goodman, Washingtonville, membership chairman.

S/MRS. LINCOLN E. FIELD, *Secretary*.

North Carolina

Western Carolina Association Formed.—The Western North Carolina V.M.A. was organized at a dinner held at the George Vanderbilt Hotel, Asheville, N. Car., Sept. 12, 1957. Twenty veterinarians were present.

Two committees, the public relations and the program committees, were formed at this initial meeting. Dr. H. W. Stevens, Buncombe County health officer, was the guest speaker.

The officers elected for the association's first year are: Drs. James Cornwell, Asheville, president; Mack Setser, Waynesville, vice-president; Viin Lind, Marion, secretary-treasurer.

Pennsylvania

Women's Auxiliary.—The annual meeting of the Women's Auxiliary to the Pennsylvania V.M.A. was held Oct. 17, 1957, in the Penthouse Lounge of the Brunswick Hotel, Lancaster. Mrs. James A. Muffy presided at the meeting.

A report on the national meeting in San Antonio was given by Mrs. Samuel F. Scheidy,

and Mrs. Vincent W. Ruth reported on the recent meeting in Cleveland. It was voted to make contributions to the Student Loan Fund, the AVMA Research Fund, and the University of Pennsylvania Student Award. Mrs. Raymond C. Snyder briefly outlined the groundwork for the AVMA's National Convention to be held in Philadelphia in August, 1958.

The following officers were elected for the ensuing year: Mrs. Raymond C. Snyder, Drexel Hill, president; Mrs. David K. Rice, Warren, president-elect; Mrs. Ernest L. Stearly, Phoenixville, treasurer; Mrs. Richard C. Guise, Harrisburg, secretary.

s/MRS. RICHARD C. GUISE, *Secretary*.

Texas

Dr. Delaplane Memorial Fund Established.—A group of Dr. John Paul Delaplane's devoted friends have established the John Paul Delaplane Memorial Fund.

The fund will be held in trust by the Texas A. & M. College and administered so that all of its income will be used to provide awards to students in recognition of research contributions in the field of poultry and animal diseases.

(The report of Dr. Delaplane's death appears in this issue's obituary columns.)

Vermont

New England Association.—At the twenty-third annual meeting of the New England V.M.A. held in Manchester, Vt., Oct. 6 to 9, 1957, the following officers were elected for the ensuing year: Drs. George C. Cilley, Jr., Concord, N.H., president; Warren J. Comstock, Clayville, R.I., president-elect; and C. Lawrence Blakely, Boston, secretary-treasurer.

The 1958 meeting will be held at the Hotel Wentworth, Portsmouth, N.H., September 21 to 24.

s/C. LAWRENCE BLAKELY, *Secretary-treasurer*.

West Virginia

Women's Auxiliary.—The seventeenth annual meeting of the Women's Auxiliary to the West Virginia V.M.A. was held on Oct. 7, 1957, in Charleston, W. Va., with a large number of members attending.

The members voted to send \$10 each to the Student Loan Fund, and to the AVMA Research Fund, and to send \$5 to the General and Award Funds.

Mrs. Thomas P. From, the West Virginia delegate to the annual meeting of the A.V.M.A. Women's Auxiliary in Cleveland, reported and notified the members that the West Virginia group had made the honor roll for 1956-1957.

The new officers elected for the coming year are: Mrs. Harold C. Spencer, Sistersville, president; Mrs. Gordon F. Phillips, Charleston, vice-president; Mrs. Henry P. Melanson, South

Charleston, secretary and membership chairman; Mrs. Thomas P. From, Petersburg, treasurer; and Mrs. Harry J. Fallon, Huntington, public relations.

Mrs. Thomas P. From was voted the delegate and Mrs. Victor H. Miller the alternate to represent the auxiliary at the Ninety-Fifth Annual Convention of the AVMA in Philadelphia next August.

s/MRS. HENRY P. MELANSON, *Secretary*.

FOREIGN NEWS

Brazil

Seventh Brazilian Veterinary Congress Held.

—The seventh Brazilian Veterinary Congress was held in Recife, Pernambuco, Oct. 12-19, 1957, sponsored by the Veterinary Medical Association of Northeast Brazil. The 143 participants represented 15 states, the federal district, and two territories.

The scientific sessions were devoted to the following subject areas: infectious and parasitic diseases; physiology and pathology of reproduction, artificial insemination, animal husbandry; pastures and forages, animal nutrition, poisonous plants; clinical veterinary medicine and surgery; hygiene and food technology of animal products; sanitary animal policy; history of veterinary medicine, professional topics; veterinary anatomy and physiology; animal pathology.

In all, about 50 papers were contributed on animal pathology, animal husbandry, and other topics of professional interest. In addition, special guests delivered lectures or conducted conferences on artificial insemination, helminthiasis of domestic animals, poisonous plant problems, research progress in foot-and-mouth disease, brucellosis and its prophylaxis, and social problems related to professional activities.

The committee on local arrangements organized and presented a varied program, including visits to dairy farms and industries around Recife, a dinner given by the municipal administration, and a barbecue in the zoo and botanical garden sponsored by the Veterinary Medical Association of Northeast Brazil.

(The foregoing report was furnished by Dr. Antonio V. Machado, dean of the Superior College of Veterinary Medicine, Rural University of Minas Gerais, Belo Horizonte, Brazil, who represented the AVMA at the Congress.)

Germany

Annual Food Hygiene Conference in Germany.—The annual conference on veterinary food hygiene, sponsored by the German Veterinary Association, was held at Bad Nauheim, Germany, Oct. 8 to 10, 1957.

The first day of the conference was devoted to the presentation and discussion of 14 papers

on milk hygiene and control, and on the following day, 12 papers on meat hygiene were discussed. The last day of the conference was devoted to a discussion of plans for construction, management, and sanitary control of slaughterhouses. Three hundred and fifteen veterinarians attended the conference with representatives from six European countries.

Professor Doctor Martin Lerche, veterinary college, Berlin, presided at the conference. Professor Doctor Martin Seelemann, Kiel, Germany, was chairman. Standardization of the food control laws throughout Germany keynoted the conference.

S/COL. W. E. JENNINGS.

Puerto Rico

Puerto Rico Association.—The Puerto Rico V.M.A. sponsored a series of lectures by Dr. Frank Kral, professor of veterinary medicine, University of Pennsylvania, Aug. 26-30, 1957, at San Juan.

Dr. Kral's lectures were attended by veterinarians in government employment, in private practice, and in the United States Army Veterinary Corps.

The subjects included the following: non-infectious dermatoses of external origin; dermatoses as manifestations of internal disorders and hormonal imbalance; allergic dermatoses and photosensitization; dermatoses caused by mites; infectious dermatoses transmissible from animal to man; animal dermatomycoses transmissible to man; and the clinical demonstrations on both small and large animals on endoscopy, percussion, auscultation, and the differential diagnosis of respiratory disorders.

S/JOSE D. RIVERA-ANAYA, Secretary.

STATE BOARD EXAMINATIONS

ARIZONA—Jan. 22-23, 1958. Phoenix. E. R. Hinshaw, secretary, P. O. Box 462, Buckeye, Ariz.

CALIFORNIA—January 30-31 and Feb. 1, 1958. Davis. William E. Barbeau, executive secretary, 1020 N. St., Sacramento 14, Calif.

COLORADO—Jan. 15-16, 1958. Arvada; and first week in June, depending on graduation date, Fort Collins. W. D. Stauffer, secretary, 5500 Wadsworth Blvd., Arvada, Colo.

CONNECTICUT—Jan. 14-16, 1958. Hartford. Richard J. Gorman, secretary, State Office Building, Hartford, Conn.

GEORGIA—Dec. 19, 1957 (December 20, if needed to complete the exam), Atlanta. C. L. Clifton, secretary, 224 State Capitol, Atlanta, Ga.

MINNESOTA—Jan. 6-7, 1958. St. Paul. A. C. Spannaus, secretary, Route 1, Waconia, Minn.

NEW JERSEY—Dec. 27-28, 1957. Trenton. Joseph A. S. Millar, secretary, Box 172, Deal, N.J.

NORTH DAKOTA—April 9-10, 1958. Fargo. M. C. Hawn, secretary-treasurer, 1407 13 St. N., Fargo, N. Dak.

NEW MEXICO—Jan. 13, 1958. Santa Fe. Edwin J. Smith, secretary, P.O. Box 4385, Santa Fe, N.M.

PUERTO RICO—Jan. 7, 1958. San Juan. Joaquin Mercado Cruz, secretary, Box 3271, San Juan, P. R.

TEXAS—Jan. 15-17, 1958. Austin. T. D. Weaver, executive secretary, 207 Capital National Bank Building, Austin 16, Texas.

DEATHS

Star indicates member of AVMA

★**E. T. Baker** (OSU '09), 75, Moscow, Idaho, widely known veterinarian and author of many articles and several books, died on Oct. 27, 1957, after an illness of several months.

Born in Dayton, Pa., July 1, 1882, Dr. Baker moved to Pullman, Wash., shortly after receiving his degree from Ohio State University, and taught veterinary science at Washington State College. He then moved to Idaho and taught at the University of Idaho until he entered private practice in Moscow in 1913.

He had an extensive general practice but was particularly interested in the diseases of cattle and sheep. A frequent contributor to veterinary medical and livestock publications, Dr. Baker was also the author of the "Cow Owners Handbook" and "Management and Feeding of Sheep."

He joined the AVMA in 1910 and was made a life member in 1955. Surviving are his widow, a son, a daughter, and four grandchildren.

★**John P. Delaplane** (OSU '29), 51, professor and head of the Department of Microbiology, School of Veterinary Medicine, Texas A. & M. College since 1950, died on Sept. 22, 1957, following a heart attack.

Born in Greenville, Ohio, Dec. 4, 1906, Dr. Delaplane received his early education in the local high school, then enrolled at the Ohio State University where he received his D.V.M. degree in 1929, and his M.S. degree in 1931.

He then served as assistant research professor in poultry husbandry at Rhode Island State College, then as associate research professor in poultry diseases until 1942, at which time, he joined the staff of the Texas Agricultural Experiment Station as poultry pathologist. In 1946, he returned to Rhode Island as research professor of poultry diseases until accepting the position he occupied at Texas A.M. at the time of his death.

Dr. Delaplane was a member of a number of professional and scientific associations including the AVMA, which he joined in 1930, the Rhode Island and Texas Veterinary Medical Associations, the Society of Experimental Biology and Medicine, the U. S. Livestock and Sanitary Association, and Phi Kappa Phi. He had served as secretary and chairman of the AVMA section on poultry and chairman of the pathology section of the Poultry Science Association.

He was the author of numerous papers on poultry diseases especially blackhead, coccidiosis, infectious coryza, and bronchitis, chronic respiratory diseases, and ornithosis. His honorary awards include: Alpha Zeta, Phi Kappa Phi, and Phi Zeta.

Surviving are his wife, the former Ethel M. Meryler, and two daughters.

★**Kenneth D. Devine** (WSC '42), 39, Saratoga, Calif., died Sept. 28, 1957, in his home after suffering a sudden heart attack.

Dr. Devine served in World War II and rose from the rank of lieutenant to captain while on duty in the China-Burma-India theater of the war. His special assignment was training dogs during the Burma invasion for use with the famed Merrill's Marauders battalion.

He is survived by his wife, Betty Devine.

Robert Arden Dickinson (API '41), 40, Union Springs, Ala., died Oct. 14, 1957.

He is survived by his wife and three children.

Albert G. Hoekzema (GR '15), 83, Bear Lake, Mich., died Sept. 15, 1957, after several months of illness.

Originally from the Netherlands, Dr. Hoekzema practiced veterinary medicine for 36 years in Michigan, serving three counties. He was one of the founders and former president of the Bear Lake Telephone Co.

He is survived by his wife, Mary, two daughters, a brother, and eight grandchildren.

Thomas J. Koster (UP '15), 64, Philadelphia, Pa., onetime state veterinarian and employed by the city for the past 15 years, died Aug. 11, 1957.

As a commissioned officer in the Army Veterinary Corps in World War I, Dr. Koster had had previous experience in the caring for horses which were transported to Italy and France, and later saw service at Camp Mills, N. Y., the arrival depot at Newport News, and with the A.E.F.

Dr. Koster is survived by a sister.

★**Theodore J. Niemeyer** (WSC '32), died on Sept. 23, 1956.

★**John T. Oaks** (COL '54), Lexington, Ky., died Sept. 5, 1957.

★**Benjamin F. Pfister** (KSC '21), 66, Kansas City, Mo., died Oct. 6, 1957, after suffering a heart attack, believed to have been brought on by two mishaps which he had just experienced in his small animal hospital adjoining his home.

Dr. Pfister was treating a Fox Terrier when the dog bit him on both hands. After bandaging his hands, he lit a cigarette and, in the process, ignited the bandages. He quickly smothered the flames, but the shock of seeing the bandages on fire is believed to have caused a heart attack. He was taken to the hospital where he died about 30 minutes later. Dr. Pfister had suffered a minor heart attack in 1940, but he had been in reasonably good health up to the time of his death.

Dr. Pfister, who specialized in diseases of small animals, founded the firm of Pfister, Farney & Wright, which operates the hospital. He was a member of the Masonic lodge at Fort Scott and a thirty-second degree Mason.

Surviving are his wife, Mrs. Margaret Pfister, two sisters, and two brothers.

★**Hugh Calvin Rea** (KCV '18), 66, Charlotte, N. Car., died Sept. 29, 1957.

Dr. Rea practiced veterinary medicine in Charlotte until 1952. Since 1955, he had been with the North Carolina Poultry Inspection Department.

He is survived by his wife; two sons, Dr. H. Calvin Rea, Jr., and James Green Rea; a daughter; and three sisters and four brothers.

★**Roy B. Whitesell** (IND '10), Lafayette, Ind., died Aug. 6, 1957.

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Other Deaths Reported.—The following deaths have been reported. The usual information for an obituary was not supplied.

Edward Bailey (ONT '05), Uxbridge, Ont.

Oliver A. Barber (IND '08), Hughes, Ark., died in October, 1957.

Homer Conley Boyd (KSC '21), Pine Bluff, Ark., died in October, 1957.

Albert L. Danielson (STJ '21), Russellville, Ark., died in October, 1957.

Fred E. Emery (KSC '23), Urbana, Ill., died in June, 1957.

★**U. Z. Finley** (ARK '18), Sage, Ark.

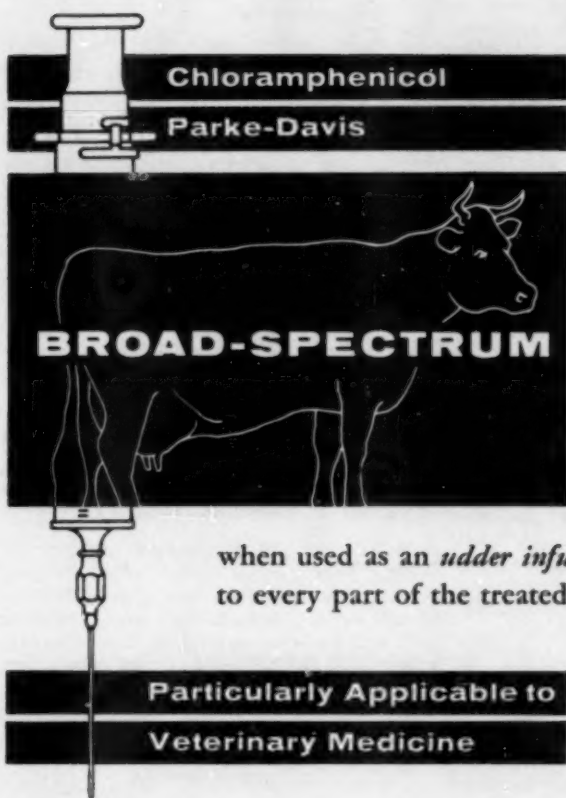
Charles A. Hulbush (MCK '08), Burlington, Wash.

★**Alva A. Johnson** (IND '18), Indianapolis, Ind., died Oct. 3, 1957.

Lionel Stevenson (ONT '26), Guelph, Ontario, died July 1, 1957.

★**Cornelius Van Vlandren** (ONT '03), Naugatuck, Conn., died in June, 1957.

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Annual Report to Members

AVMA members receive in Part 2 of this issue of the JOURNAL, the *Proceedings of the Business Sessions* of the 94th Annual Meeting of the Association which was held in Cleveland last August. This Part 2 comprises the annual reports of officers, governing bodies, headquarters staff, councils, committees, and representatives to related organizations, as well as the transactions of the House of Representatives.

Altogether, these *Proceedings* portray the breadth and scope of AVMA activities, programs, and projects; its membership and financial status; its policy determinations on a number of questions and the measures taken to solve some of the problems that veterinary medicine and the profession face today.

The 1957 annual meeting was significant in several respects. Attention is called here to only a few of the outstanding developments in the hope that all members, as time and opportunity permit, will read the record and reports, analyze them critically, review what is set forth therein. In this way only can the membership acquire understanding of the increasingly complex operations of its national association and the measures which its officers, governing bodies, and other agencies develop to meet a variety of situations.

The Outgoing President's Recommendations

The "29 points" which President Kester presented to the Executive Board, House of Representatives, and the opening general session (see his address, pp. 253-264, in the September 15 JOURNAL) have attracted wide attention. They were received by both the Executive Board and House as a "blueprint for future planning."

A number of the recommendations are already "in work" or are extensions of existing committee programs or headquarters activities. In this group are the recommendations relative to:

- ▶ study of the present AVMA public relations program
- ▶ expansion of the internal PR program
- ▶ contacts with feed, drug, and allied groups
- ▶ preparation of a digest of House actions for delegates to use in reporting back to their constituent associations

- ▶ the economics of large animal practice
- ▶ extension of graduate and postgraduate training programs
- ▶ improved liaison with student chapters
- ▶ broader support of the Research Fund and its fellowship program
- ▶ more Executive Board district meetings.

A number of other recommendations are marked for early attention and action, some pending Executive Board study and approval. These include:

- ▶ extension of public relations work with youth organizations
- ▶ exhibits for lay audiences
- ▶ a syndicated newspaper column
- ▶ a "duties handbook" for the guidance of the president and president-elect
- ▶ preparation of a handbook for constituent associations
- ▶ bimonthly publication of the *American Journal of Veterinary Research*

With respect to the recommendations for AVMA field secretaries and added PR personnel, it is apparent that these added activities entail substantial added expense and will have to await action on the proposed increase in annual dues which was approved by the House for final action in 1958.

Proposed Revision of Constitution and Bylaws

The draft of the new constitution and bylaws, as finally revised by the House and approved at Cleveland for final action in 1958, is the result of nearly two years of prior study by the Executive Board and staff. During this time, the approach to the desired revision changed from that of a series of amendments to the existing documents (the last complete revision was in 1940) to that of a complete rewriting and reorganization of them.

The result is a new framework for the more efficient and logical functioning of the Association's organizational structure of officers, governing bodies, councils, and committees. The proposed reorganization is timely because the Association is undoubtedly in a new phase of development and a new era of activities and responsibilities,



that happy time . . .

which we remember so well from the days when we, too,
rushed down to see what lay beneath the tree . .

is about to be re-created for our children and
grandchildren—and, through them, for ourselves again.

Warmest Greetings from every member of the staff at The National Laboratories!

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May the New Year bring you everything of the best!



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Membership

With a total membership of about 15,000, of which nearly 14,000 are veterinarians in the United States, the Association enjoys the voluntary support of about seven out of nine veterinarians in this country.

This fact, plus the organization of the AVMA through its duly elected officers, Executive Board members, and delegates to the House, emphasizes the democratic nature of the Association and its solid foundation. Its strength also lies in its constituent associations, most of which carry on counterpart activities and programs in their respective areas. Through programs of education, research, legislation, and public information, the AVMA and its component associations are dedicated to, and working for, the advancement of the science and art of veterinary medicine and their application, not only for the benefit of the profession but in the public interest.

Report of AVMA Representative to National Academy of Science Subcommittee on Acute and Chronic Effects of Atomic Radiation on the Blood

Your representative attended the annual meeting of the subcommittee June 15, 1957, at Brookhaven National Laboratory, Long Island, N.Y., along with representatives of 17 professional organizations and governmental departments. Following presentation of status summaries of (1) two exposed populations, (2) comparative evaluations with radiation treated populations, and (3) domestic animal studies, the discussion was concerned with the present and potential contributions of the several professional groups.

At the present time there is no certainty about the hazards and the quantitative relationships of radiation—contrary to public hearing type information. The purpose of the National Academy of Science subcommittee is to amass quantitative data and to keep the professions informed about the multiple sources of radiation in our daily lives and the potential, relative hazard of the total radiation load to mankind. In order to achieve this the committee needs the assistance of the professions in supplying information, in suggesting areas in which research and development are needed, and in lending whole-hearted support in the interpretative endeavor. Information must be obtained from continued animal research. Information is also needed on the extent of hazardous situations—quantitative data on the extent to which the population in general, as well as special populations, are exposed. The promiscuous use of radia-

tion for clinical diagnosis and therapy has not ceased, nor will it for some time to come. The expansion and development of the nuclear energy industry, and the growing use of radioactive isotopes increases the total potential radiation dose to the population.

The realistic present-day approach to the control of radiation hazard involves weighing the beneficial results to be expected from radiation exposure against the known detrimental effects and keeping the radiation dose as low as possible under the circumstances. The problem of radiation exposure is somewhat more simplified in veterinary medicine than in human medicine in regard to the beneficial *versus* detrimental effect on the patient. Consideration of a practical finite value on an animal's life is possible. Other considerations relative to the shorter life span, selective breeding, et cetera downgrade the possible detrimental effects to one subject. It goes without saying that veterinarians have no right whatever to expose other human beings, such as handlers and owners, to radiation, and to do so creates a posture of serious liability. The main consideration, then, is reduced to a comparison of the beneficial effects expected for the patient *versus* the radiation dose to the operator. The veterinary profession is no better and no worse than other professional groups in regard to the use and misuse of radiation. However, there is a growing awareness in the profession as to the deleterious effects of radiation, especially with the impetus given by veterinary schools in the training of undergraduates of recent years. The evaluation of the use of the newer radioactive isotope technique of diagnosis and therapy in veterinary medicine, in regard to relative hazards to the operator and to environmental radio-contamination levels, is imperative. There also remains a necessary task of continuing to inform the bulk of the profession concerning radiation hazards from veterinary medical uses.

It is the sincere opinion of your representative that much is to be gained by the subcommittee and by the veterinary profession through representative membership on this committee. The veterinary profession should, in every possible way, assist and complement the efforts of the subcommittee. In addition, in these times of rapid advancement in the utilization of nuclear energy and the popularity of radioisotopes in research and practice, it would behoove our profession to maintain intimate contact with the scientific approach the subcommittee maintains.

Lt. Col. U. S. Grant Kuhn, III,
Oak Ridge, Tenn.

WOMEN'S AUXILIARY

President—Mrs. Leslie H. Moe, 1814 W. Third Ave.,
Stillwater, Okla.
Secretary—Mrs. A. W. Eivers, 1595 N. 18th, Salem, Ore.

The Auxiliary Memorial Fund.—The families of the following veterinarians and wives of veterinarians who died during 1956-1957 con-

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Those wishing to contribute to the Memorial Fund in honor of a friend or relative should send the contribution to Mrs. John D. Stevens, Box 395, Sequim, Wash. Include the name, city, and state of the one honored as well as the name and address of a member of the family of the one so honored.

Contributions to the Research Fund of the AVMA should be sent to Russell G. Rongren, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill.

Contributions for the Student Loan Fund, Achievement Awards, and the General Fund should be sent to Mrs. John D. Stevens.

S/MRS. JOHN D. STEVENS, *Treasurer.*

The longevity of man has increased remarkably in recent decades. At the time of Christ, the average span of life was approximately 27 years; in 1900, it was 47 years; and today it is 67 years.—*J. Am. Osteopath. A. (Aug., 1957): 723.*



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COMING MEETINGS

Pennsylvania, University of. Fifty-eighth annual conference of veterinarians. Jan. 7-8, 1958, School of Veterinary Medicine, University of Pennsylvania, Philadelphia. Dr. James Mark, chairman.

Cornell University. Annual conference for veterinarians. New York State Veterinary College, Ithaca, Jan. 8-10, 1958. W. A. Hagan, dean.

Ohio State Veterinary Medical Association. Seventy-fourth annual meeting. Nederland Hilton Hotel, Cincinnati, Jan. 9-10, 1958. Harry C. Sharp, executive secretary.

Oklahoma Veterinary Medical Association. Annual meeting. Hotel Lawtonian, Lawton, Jan. 9-10, 1958. Mrs. Larma Bennett, 2805 S. W. 51 St., Oklahoma City, executive secretary.

Kansas Veterinary Medical Association. Annual convention. Hotel Broadview, Wichita, Jan. 12-14, 1958. K. Maynard Curtis, 5236 Delmar Ave., Kansas City 3, Kan., secretary.

Tennessee Veterinary Medical Association. Annual meeting. Hotel Andrew Jackson, Nashville, Jan. 12-14, 1958. H. W. Hayes, 3009 Clinton Pike, Nashville, secretary-treasurer.

Iowa Veterinary Medical Association. Annual meeting. Hotel Fort Des Moines, Des Moines, Jan. 14-16, 1958. F. B. Young, Wauke, Iowa, secretary.

American Board of Veterinary Toxicologists. Winter meeting. Salt Lake City, Utah, Jan. 15, 1958. William F. Harris, 1102 East Main St., Puyallup, Wash., secretary.

Indiana Veterinary Medical Association. Annual meeting. Hotel Severin, Indianapolis, Ind., Jan. 15-17, 1958. L. M. Borst, 3315 Shelby, Indianapolis, secretary.

Intermountain Veterinary Medical Association. Annual meeting. Hotel Utah, Salt Lake City, Jan. 16-18, 1958. R. A. Bagley, 4600 Creek View Dr., Murray, Utah, secretary.

Minnesota Veterinary Medical Association. Annual meeting. St. Paul Hotel, St. Paul, Jan. 20-22, 1958. B. S. Pomeroy, School of Veterinary Medicine, University of Minnesota, St. Paul 1, Minn., secretary.

Michigan State University. Thirty-fifth annual postgraduate conference for veterinarians, Jan. 22-23, 1958. College of Veterinary Medicine, Michigan State University, East Lansing. W. W. Armistead, dean.

California Veterinary Medical Association. Midwinter conference. School of Veterinary Medicine, University of California, Davis, Jan. 27-29, 1958. C. S. Travers, 3004 16th St., San Francisco, executive secretary.

Louisiana State University. Annual veterinary conference. Louisiana State University, Baton Rouge, Jan. 28-29, 1958. W. T. Oglesby, Baton Rouge 3, La., head.

North Carolina State College. Conference for veterinarians. North Carolina State College, Raleigh, Jan. 28-31, 1958. C. D. Grinnells, chairman.

Maryland State Veterinary Medical Association. Annual Winter meeting. Emerson Hotel, Baltimore, Md., Jan. 30-31, 1958. Harry L. Schultz, Jr., 9011 Harford Rd., Baltimore 14, Md., secretary-treasurer.

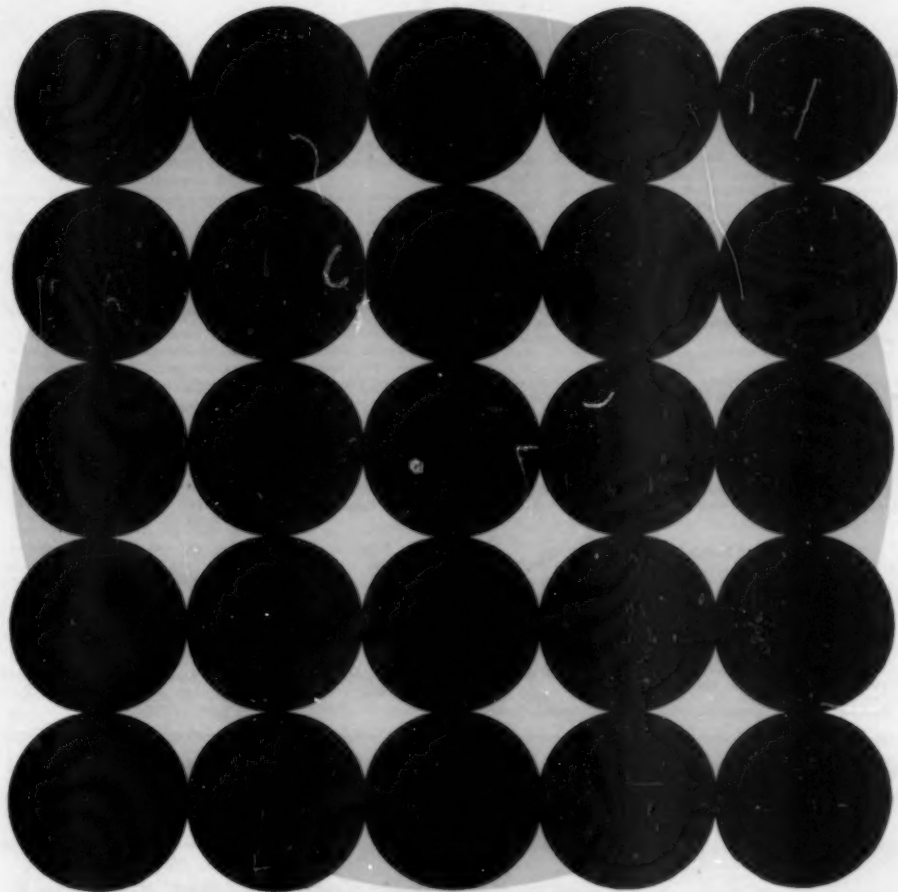
Oregon Veterinary Medical Association. Winter meeting. Portland, Jan. 31-Feb. 1, 1958. Edward L. Holden, P. O. Box 445, Oswego, secretary.

Missouri Veterinary Medical Association. Hotel Continental, Kansas City, Mo., Feb. 9-10, 1958. W. L. Schondelmeyer, 116 E. Maple, Independence, Mo., chairman.

Wisconsin Veterinary Medical Association. Forty-second annual meeting. Hotel Pfister, Milwaukee, Wis., Feb. 10-12, 1958. Burr A. Beach, Veterinary Science Bldg., University of Wisconsin, Madison 6, Wis., secretary.

New Jersey Veterinary Medical Association. Seventy-fourth annual meeting. Hotel Berkeley-Carteret Hotel, Asbury Park, N. J., Feb. 12-13, 1958. John R. McCoy, Rutgers University, New Brunswick, N. J., secretary.

Region Four American Animal Hospital Association. Winter meeting. Veterinary Clinic, Fort Collins, Colo., Feb. 16, 1958. D. T. Albrecht, secretary.



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Colorado State University. Nineteenth annual veterinary conference. Glover Veterinary Hospital, College of Veterinary Medicine, Colorado State University, Fort Collins, Colo., Feb. 17-19, 1958. Lloyd C. Moss, head Department of Medicine, Colorado State University, secretary.

Illinois State Veterinary Medical Association. Annual convention. LaSalle Hotel, Chicago, Feb. 17-19, 1958. C. B. Hostetler, 1385 Whitcomb Ave., Des Plaines, Ill., executive-secretary.

American Animal Hospital Association. Silver anniversary meeting. Drake Hotel, Chicago, Ill., April 23-26, 1958. Dr. Wayne H. Riser, secretary.

Oklahoma State University. Oklahoma conference for Veterinarians. College of Veterinary Medicine, Oklahoma State University, Stillwater, May 5-6, 1958. Lester Johnston, Department of Veterinary Medicine and Surgery, chairman.

New York State Veterinary Medical Society. Sixty-seventh annual meeting. Concord Hotel, Kiamasha Lake, N. Y., Sept. 10-12, 1958. Joan S. Halat, 803 Varick St., Utica, N. Y., executive secretary.

New England Veterinary Medical Association. Annual meeting. Hotel Wentworth, Portsmouth, N. H., Sept. 21-24, 1958. C. Lawrence Blakely, 100 Longwood Ave., Boston 15, Mass., secretary-treasurer.

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Association, the first Thursday of each month. B. M. Lauderdale, Montgomery, secretary.

Jefferson County Veterinary Medical Association, the second Thursday of each month. S. A. Price, 213 N. 15th St., Birmingham, secretary.

Mobile-Baldwin Veterinary Medical Association, the third

Foreign Meetings

Sixth International Congresses on Tropical Medicine and Malaria. Lisbon, Portugal, Sept. 3-13, 1958. Professor Manuel R. Pinto, Institute of Tropical Medicine, Lisbon, secretary-general. (Membership application forms may be obtained by U.S. veterinarians by writing to the AVMA.)

Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

North Alabama Veterinary Medical Association, the second Thursday of November, January, March, May, July, and September, in Decatur, Ala. Ray A. Ashwander, Decatur, Ala., secretary.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. Keith T. Maddy, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. E. T. Anderson, Rt. 2 Box 697, Tucson, Ariz., secretary.

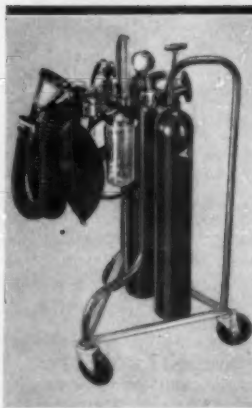
CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the fourth Wednesday of Jan., March, May, June, Aug., Oct., and Nov. Leo Goldston, 3793 Broadway, Oakland 11, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December at 3004 16th St., San Francisco, Calif. Mr. Herb Warren, executive secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. A. L. Irwin, 301 Taft Highway, Bakersfield, Calif., secretary.

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Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P. O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. Lyle A. Baker, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Chester A. Maeda, 766 E. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. R. C. Lawson, 40-40 El Camino, Palo Alto, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. W. E. Steinmetz, 4227 Freepoint Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. H. R. Rosoll, 1795 Moore St., San Diego, Calif., secretary.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, secretary.

Santa Clara Valley Veterinary Association, the fourth Tuesday of each month. Kay Beulley, N. Fourth and Gish Rd., San Jose, Calif., secretary.

Southern California Veterinary Medical Association, the last Wednesday of each month. Don Mahan, 1919 Wilshire Blvd., Los Angeles 57, Calif., executive secretary.

Tulare County Veterinarians, the second Thursday of each month. R. B. Barsaleau, 2335 E. Mineral King, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Society, the fourth Tuesday of every month. Richard C. Tolley, 5060 S. Broadway St., Englewood, Colo., secretary.

Northern Colorado Veterinary Medical Society, the first Monday of each month. M. A. Hammarlund, School of Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. E. J. Hathaway, Clifton Park Manor, Apt. 73-5, Wilmington 2, Del., secretary.

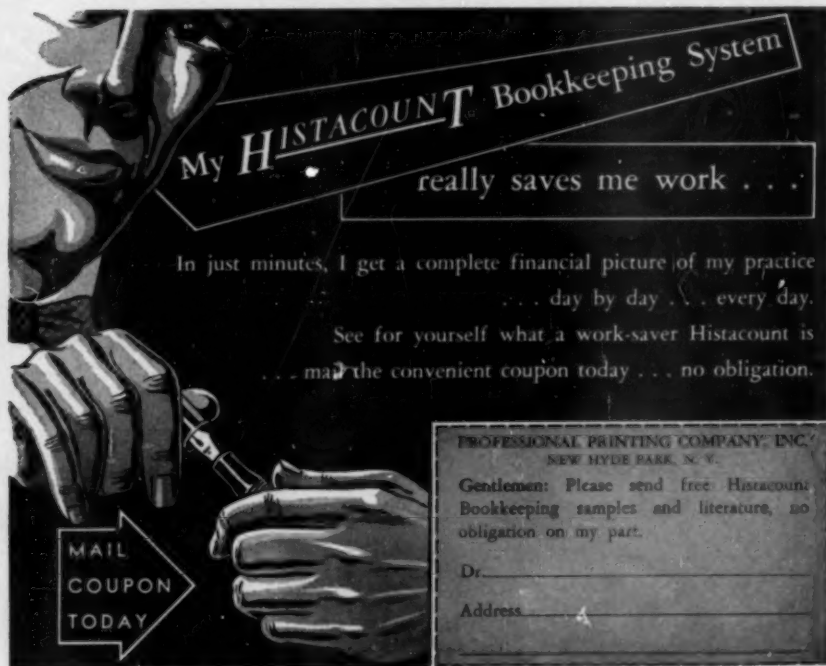
FLORIDA—Central Florida Veterinary Medical Association, the first Tuesday of each month, time and place specified monthly. Jack H. McElyer, 5925 Edgewater Drive, Orlando, Fla., secretary.

Florida West Coast Veterinary Medical Association, the second Wednesday of each month at the Lighthouse Inn, in St. Petersburg. R. L. Brutus, 336 E. 15th St., Hialeah, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodsons Restaurant, P. S. Roy, 4443 Atlantic Blvd., Jacksonville, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. T. R. Geci, 108B Catherine Ave., Pensacola, Fla., secretary.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St.,



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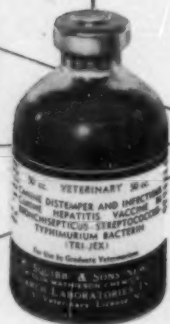
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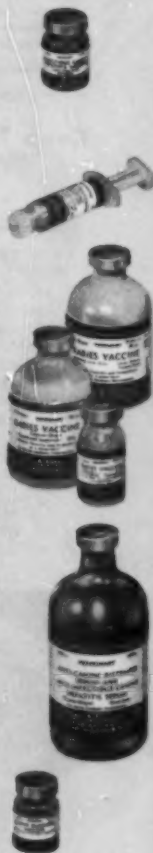
...both phenolized and chick embryo origin, for positive immunization against rabies for a period of one year. Supplied in 5 x 3 cc.—1 and 10-dose vials for live virus, chick embryo origin, 50 cc. vials for phenolized suspension.

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West Palm Beach. J. J. McCarthy, 500-25th Street, West Palm Beach, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Barrow, Fla. Paul J. Myers, Winter Haven, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month. Time and place specified monthly. Frank Mueller, Jr., 4148 E. 8th Ave., Hialeah, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. W. B. Martin, Jr., 3082 N. W. 6th St., Gainesville, Fla., secretary.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. A. E. Hixon, 131 Mary St., Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Society, the second Tuesday of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Mark E. Davenport, Jr., 215 S. Edgewood Ave., LaGrange, Ill., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. H. S. Bryan, College of Veterinary Medicine, University of Illinois, Urbana, secretary.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. Peter Johnson, Jr., 4410 N. Keystone Ave., Indianapolis 5, secretary.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. J. M. Carter, 3421 S. Main St., Elkhart, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P. O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Medical Association, the second Monday of each month, except January, July, August, and October in Black's Tea Room, Waterloo, Iowa. A. J. Cotten, Grundy Center, secretary.

Central Iowa Veterinary Medical Association, the third Monday of each month, except June, July, and August, at 6:30 p.m., Breeze House, Ankeny, Iowa. John Herrick, Ames, secretary.

Coon Valley Veterinary Medical Association, the second Wednesday of each month, September through May, at 7:30 p.m., Cobblestone Inn, Storm Lake, Iowa. Robert McCutcheon, Holstein, secretary.

East Central Iowa Association, the second Thursday of each month, at 6:30 p.m., usually in Cedar Rapids, Iowa. William Rugger, Oxford, secretary.

Fayette County Veterinary Medical Association, the third Thursday of each month at 6:30 p.m. in West Union, Iowa. H. J. Morgan, West Union, secretary.

Northwest Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wineslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

KANSAS—Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Tuesday of each month. Robert E. Guilfoill, 18 N. 2nd St., Kansas City 18, Kansas, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. L. S. Shirrell, Versailles Rd., Frankfort, secretary.

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Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month in Louisville or within a radius of 50 miles. W. E. Bewley, P.O. Box "H," Crestwood, secretary.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m. at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Harry L. Schultz, Jr., 9011 Harford Rd., Baltimore, Md., secretary.

MICHIGAN—Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 3034 Armstrong Rd., Lansing 17, Mich., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

Southeastern Veterinary Medical Association, the fourth Wednesday of every month, September through May. Gilbert Meyer, 14005 E. Seven Mile Rd., Detroit 3, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August), at the Coronado Hotel, Lindell Blvd. and

Spring Ave., St. Louis, Mo., at 8 p.m. Chester R. Pledge, 4249 Peck St., St. Louis 7, Mo., secretary.

Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Tuesday of each month. Robert E. Guilfoil, 18 N. 2nd St., Kansas City 18, Kansas, secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Milburn Ave., Maplewood, N. J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Mana in Teaneck. James R. Tansola, Upper Saddle River, secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. R. Muller, 43 Church St., Lambertville, N. J., secretary.

Southern New Jersey Veterinary Medical Association, the fourth Tuesday of each month at the Collingswood Veterinary Hospital, Collingswood. R. M. Sauer, secretary.

NEW YORK—New York City, Inc., Veterinary Medical Association of the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

New York State Veterinary College, Annual conference for veterinarians. Cornell University, Ithaca. W. A. Hagan, New York State Veterinary College, Cornell University, Ithaca, N. Y., dean.

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Dr. Hammarlund Joins Ralston Purina Staff

Dr. Marion A. Hammarlund, a former faculty member of Colorado State University has joined the Animal Pathology Division of the Ralston Purina Company, Dr. R. M. Bethke, research vice-president, announced in October.

A native of Topeka, Kan., Dr. Hammarlund received his B.S. and D.M.V. degrees at Kansas State College. Following two years in large animal veterinary practice, he joined Colorado State University where he did diagnostic work and



Dr. Marion A. Hammarlund

taught poultry diseases. Dr. Hammarlund also did graduate study in animal pathology.

He is a member of the American Veterinary Medical Association and a reserve officer in the U. S. Army Veterinary Corps.



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What Is Your Diagnosis?

Because of the interest in veterinary radiology, a case history and radiographs depicting a diagnostic problem are usually published in each issue.

Make your diagnosis from the picture below—then turn the page ▶



Figure 1

History.—A female Collie, 7 years old, was slightly lame in the left front leg since a dog fight two months previously. The leg was not tender but serum was draining from a wound on the volar surface 5 cm. above the carpal joint. A radiograph was taken.

(Diagnosis and findings are reported on next page)

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Focal periostitis, probably the result of the penetration of the periosteum by a dog's tooth.

Comment.—The area was incised and examined for the presence of a non-opaque foreign body. When none was found, the periosteum was scraped with a curette and the wound packed with petrolatum gauze which was removed in ten days. The wound healed promptly. Penicillin (300,000 I.U.) was given daily for five days.



Fig. 2—Radiograph, lateral view, of the foreleg of the dog showing focal periostitis of the ulna (arrow).

Discussion by Publications Committee, American Veterinary Radiological Society.—Periosteum reacts to injury with proliferation and calcification; as for example, the interesting "rubber band" cases show tunnels similar to this one illustrated, except that they encircle the bone involved. Following adequate drainage and the use of antibiotics, recession of the lesion may be expected.

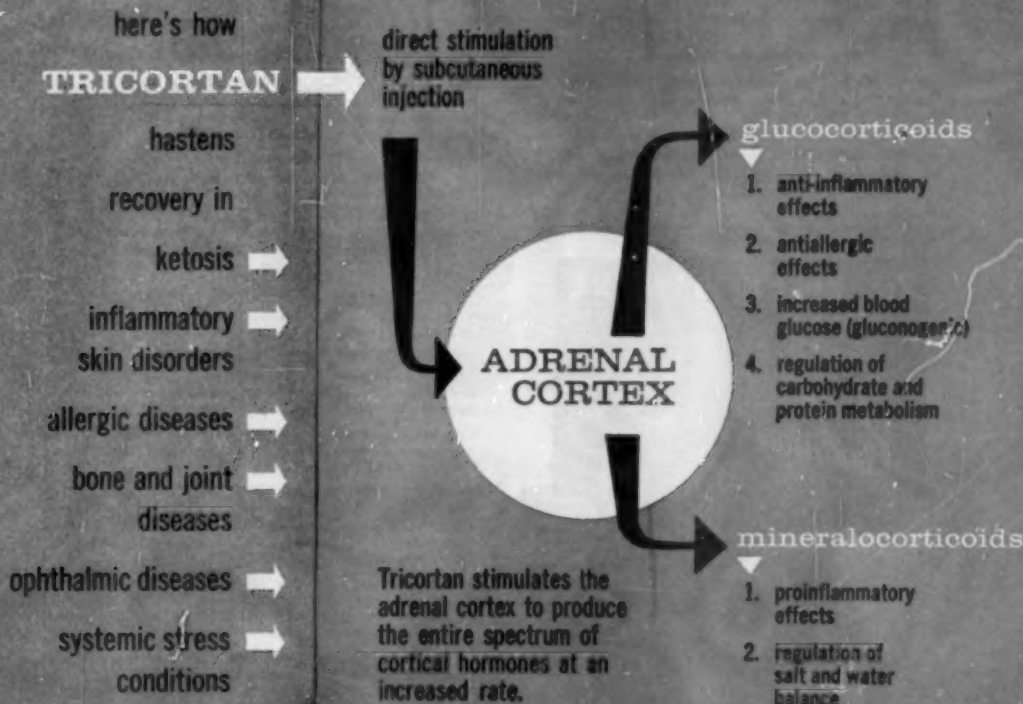
Our readers are invited to submit histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

This case was presented by members of the staff of the Riser Animal Hospital, Skokie, Ill.

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*Patent applied for



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Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified monthly, Byron H. Brow, Box 453, Goldsboro, N. Car., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. John G. Martin, Boone, N. Car., secretary.

Twin Carolinas Veterinary Medical Association, the third Thursday of each month in the Orange Bowl Restaurant, Rockingham, N. Car., at 7:30 p.m. James R. Burgess, Rockingham, N. Car., secretary.

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North Central Ohio Veterinary Medical Association, the last Wednesday of each month except during the summer. R. W. McClung, Tiffin, Ohio, secretary-treasurer.

Columbus Academy of Veterinary Medicine, every month, September through May. E. M. Simonson, Columbus, Ohio, secretary-treasurer.

Cuyahoga County Veterinary Medical Association, the first Wednesday in September, October, December, February, March, April, and May, at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. F. A. Coy, Cleveland, Ohio, secretary.

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Killbuck Valley Veterinary Medical Association, the first Wednesday of alternate months beginning with February. D. J. Kern, Killbuck, Ohio, secretary-treasurer.

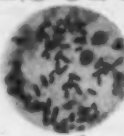
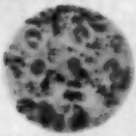
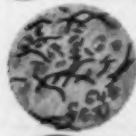
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Stark County Veterinary Medical Association, the second Tuesday of every month, at McBrides Emerald Lounge, Canton, Ohio. M. L. Willen, 4423 Tuscarawas St., Canton, Ohio, secretary.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Forest H. Stockton, 2716 S.W. 29th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Don L. Hohmann, 538 S. Madison St., Tulsa, Okla., secretary.

OREGON—Portland Veterinary Medical Association, the second Tuesday of each month, at 7:30 p.m., Ireland's Restaurant, Lloyds', 718 N.E. 12th Ave., Portland. Donald L. Moyer, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

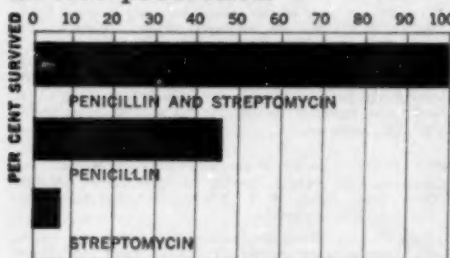
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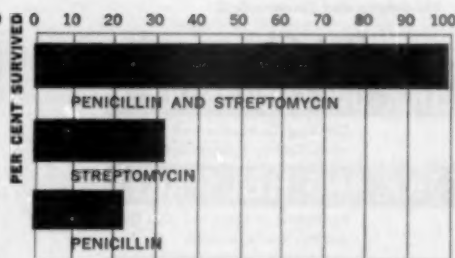
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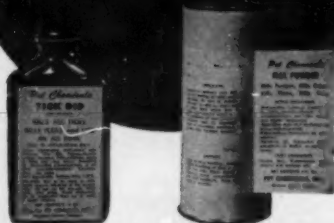
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SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary Ct., Richmond 20, Va., secretary.

Northern Virginia Veterinary Conference, the second Tuesday of each month. Francis E. Mullen, 1130 S. Main St., Harrisonburg, Va., secretary-treasurer.

Northern Virginia Veterinary Society, the Second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwest Virginia Veterinary Medical Association, the first Thursday of each month. I. D. Wilson, Blackburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle, Wash. William S. Green, 9637 S. E. 36th, Mercer Island, Wash., secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. O. I. Bailey, P. O. Box 906, Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

WISCONSIN—Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.). R. J. O'Hern, P.O. Box 617, Cumberland, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. Dr. R. H. Steinkraus, 7701 N. 59th St., Milwaukee, Wis., secretary.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madison, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. W. E. Lyle, P. O. Box 107, Deerfield, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

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¹Southworth, J. L. and Dublin, C. H., "Xylocaine: A Superior Agent for Combination Anesthesia", *Current Researches in Anesthesia and Analgesia*, May-June, 1953, p. 166.

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